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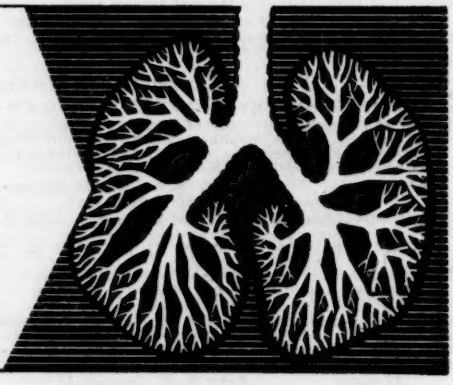

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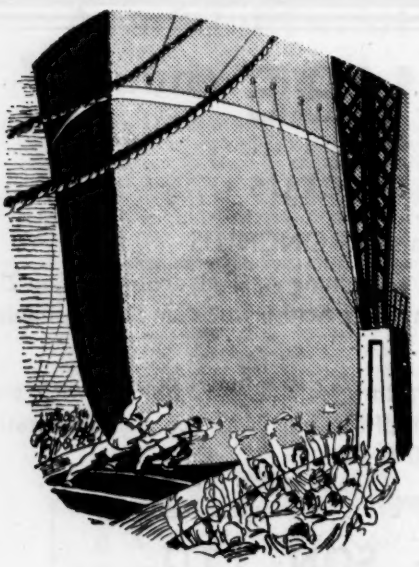

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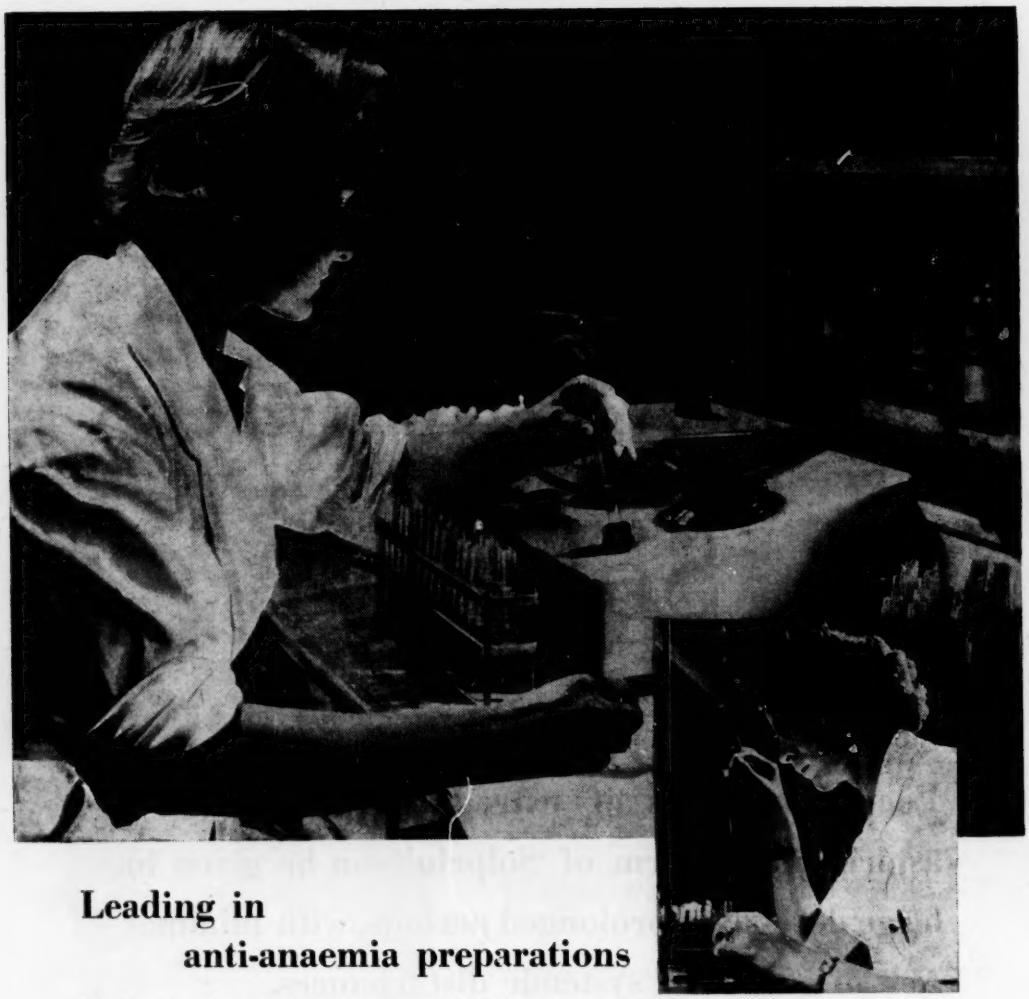

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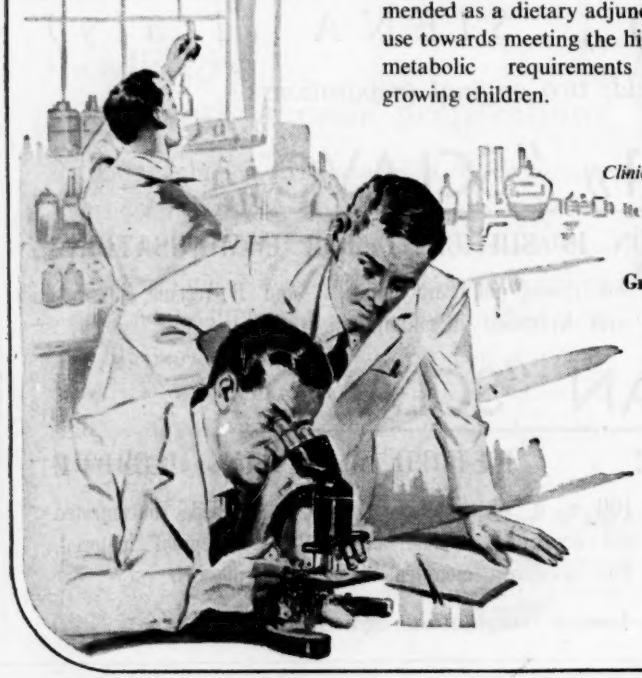

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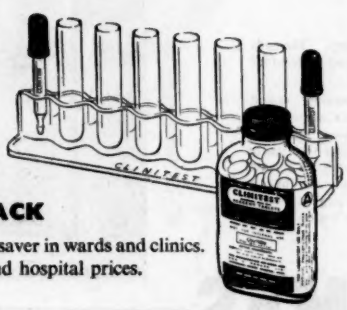

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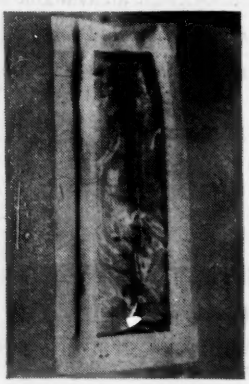

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The Bencard range of pollen extracts for specific hyposensitisation is the largest in Great Britain and is set out in our Extended List of Allergens available on request.

A new colour sound film "Allergic Diseases in Man," describing the modern concept of Allergy, and skin testing and desensitisation techniques, will shortly be ready for showing to Medical Audiences.

Information from:—

C. L. BENCARD LTD

PARK ROYAL · LONDON · N.W.10

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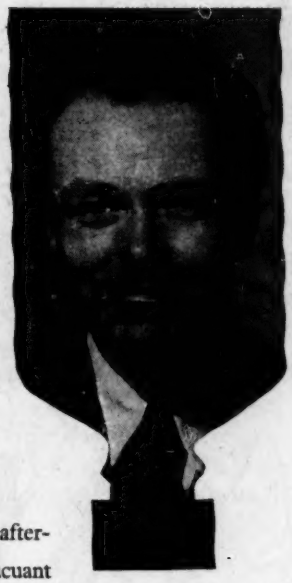
Telegrams: Bencarlond, Harles, London



the 'family' tree . . .

A species of buckthorn tree supplies the 'sacred bark' from which Cascara Evacuant is made. Introduced to medicine by Parke, Davis over 50 years ago it is the ideal laxative for the safe and gentle relief of occasional or chronic constipation . . . for people of every age, in every family. A refined and palatable liquid, non-griping, non-habit forming, with no great tendency to after-constipation, Cascara Evacuant can be used for years without ill-effect. It is a *natural* tonic laxative.

Cascara Evacuant

PARKE-DAVIS

THE IDEAL TONIC LAXATIVE

Parke, Davis & Company Limited, *(inc. U.S.A.)* Hounslow, Middlesex. Tel: Hounslow 2361

291

Transvasin

brings the esters of NICOTINIC ACID SALICYLIC ACID p-AMINOBENZOIC ACID to the focal point of soft-tissue rheumatism

The esters in Transvasin, a new preparation developed by Hamol S.A., our Swiss associates, readily pass the skin barrier in therapeutic quantities and enable an effective concentration of the drugs to be built up where they are needed. Transvasin not only induces vasodilation of the skin with a superficial erythema, but also brings about a deep hyperaemia of the underlying tissues. It is non-irritant, and can be safely used on delicate skins.

It is now being widely prescribed, with successful clinical results. Since a very small quantity is sufficient for each application, the cost of treatment is extremely low.

Salicylic acid tetrahydrofurfuryl-ester	14%
Nicotinic acid ethyl-ester	2%
Nicotinic acid n-hexyl-ester	2%
p-Aminobenzoic acid ethyl-ester	2%
Water-miscible cream base ad	100%

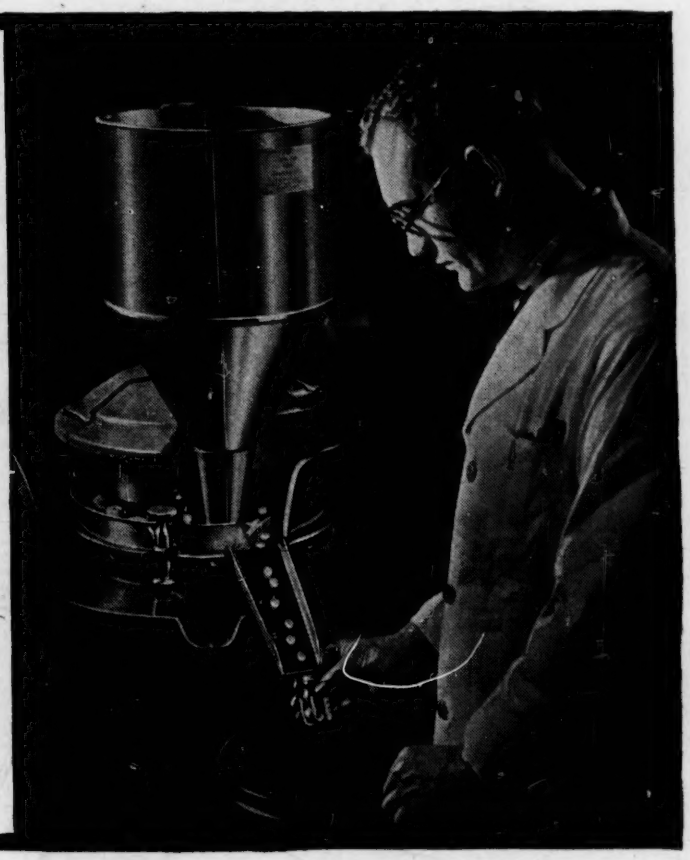
Transvasin is available in 1 oz. tubes, basic price 2/6 plus 7½d P.T., and is not advertised to the public. Samples and literature will be gladly sent on application.

LLOYD-HAMOL LTD., 11 Waterloo Place, London, S.W.1 WHItehall 8654/5/6

Transvasin is the registered trade mark of Lloyd-Hamol Ltd.

EVANS
MEDICAL
make
a contribution to

PEPTIC ULCER THERAPY



AN EFFECTIVE METHOD of relieving the symptoms of hyperchlorhydria and peptic ulceration is provided by Collubarb Tablets, containing aluminium hydroxide (Collumina brand) 5 grains (0.32 grm.) phenobarbitone ¼ grain (0.016 grm.) and atropine sulphate 1/500 grain (0.13 mg.).

A Three-fold Function

1 *The aluminium hydroxide neutralises excess acid without producing an alkaline condition of the stomach.*

2 *The phenobarbitone helps to relieve the anxiety tension so often associated with hyperchlorhydria and peptic ulceration.*

3 *The small dose of atropine sulphate moderates excessive motor activity of the gastro-intestinal tract with diminution of secretion of gastric juice.*

Cartons of 24 and 100 (film wrapped) Containers of 500

COLLUBARB TABLETS
TRADE MARK

Further information on request from :
Medical Information Department, Speke, Liverpool 19, or Ruislip, Middlesex

EVANS MEDICAL SUPPLIES LTD
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463

Merrell research

Nervous dyspepsia has become a problem to be reckoned with, provoking investigation and research and suggestions for remedies . . . 'Merbentyl' is one of the newest and most effective. It is an antispasmodic with both neurotropic and musculotropic effect upon smooth muscle of the gastro-intestinal and genito-urinary tracts, producing excellent results in the relief of painful spasm associated with functional and organic gastro-intestinal disease. Compared with other antispasmodics both natural and synthetic, 'Merbentyl' is strikingly free from side-effects.

MERBENTYL

distributed in the United Kingdom & Eire by
RIKER LABORATORIES LIMITED, LOUGHBOROUGH, LEICS.
for the Wm. S. Merrell Company, London.

MERBENTYL *Tablets each containing 10 mg. Diethylaminocarbethoxybicyclohexyl hydrochloride.*

MERBENTYL WITH PHENOBARBITONE *Tablets each containing 10 mg. Diethylaminocarbethoxybicyclohexyl hydrochloride and 15 mg. Phenobarbitone.*

Each in bottles of 50 and 250 tablets. The basic N.H.S. cost of treatment is less than 5d. a day.

Nocturnal Excursions

Are frequently the occasion of falls in elderly patients suffering from increased frequency of micturition.* The local analgesic action of 'Pyridium' on the urinary tract, and its relaxing effect on the sphincter of the bladder, will often help to ensure an undisturbed night. There is no general sedation or blunting of the faculties with

PYRIDIUM

For cost to N.H.S., please see M. & J. list of costs dated April, 1954

* *Practitioner* (1954) **172**, 643-4

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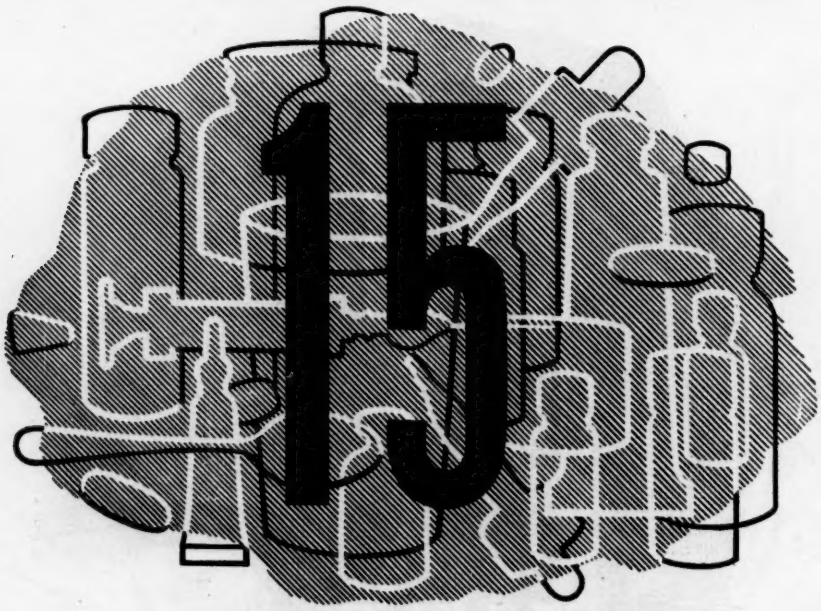
Tel: BRIxton 7851

UAP94

'Pyridium' is the trade mark of Nepera Chemical Co., Inc.



presentations of

AUREOMYCIN*

Chlortetracycline

simplify antibiotic therapy in general practice

Aureomycin is now derestricted and can be prescribed on N.H.S. Form E.C.10

So much evidence exists testifying the supreme value of Aureomycin in medical practice that Lederle research has perfected no less than 15 different pharmaceutical presentations of the antibiotic. Now that Aureomycin is derestricted, doctors in general practice can select from this wide range of preparations the precise form which best meets the urgent needs of the patient. The Aureomycin range now includes :—

Capsules	**Ointment**	**Soluble Tablets**
Dental Cones	**Ophthalmic Ointment**	**Spersoids*** *Dispersible Powder*
Dental Paste	**Ophthalmic**	**Syrup**
Intravenous‡	**Oral Drops**	**Troches**
Nasal	**Otic**	**Vaginal Powder**

Average adult dose 1 Gm. daily

‡ *At present available to Hospitals only.* * *Trade mark.*

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LEDERLE LABORATORIES DIVISION

Cyanamid Products Ltd.

BUSH HOUSE · ALDWYCH · LONDON, W.C.2 · TEMPLE BAR 5411

In many respects THE SAFEST among the potent hypotensives

VERILOID

a unique alkaloidal extract of Veratrum viride

- lowers blood pressure by vasorelaxation independent of vagomotor effect
- no ganglionic or adrenergic blocking
- no danger of postural hypotension
- cardiac output is not reduced
- no compromise of renal function
- no decrease of cerebral blood flow
- tolerance or sensitivity rarely develops
- can be given over long periods without loss of efficacy

now in a new and highly advantageous dosage form . . .

RAUWILOID + VERILOID

WHAT RAUWILOID IS

Rauwiloid represents the standardized alkaloids of Rauwolfia serpentina, each batch being tested in dogs for hypotensive, bradycardic and sedative effects.

The addition of Rauwiloid (1 mg.) to Veriloid (3 mg.) in one tablet presents unique advantages. Rauwiloid, a mild hypotensive producing virtually no side-effects, leads to desirable moderate bradycardia, a feeling of calm tranquillity, and rapid remission of symptoms. It apparently potentiates the powerful hypotensive action of Veriloid, thus making it possible to obtain marked reduction of blood pressure from lower doses of Veriloid with less likelihood of side-effects.

The initial dose is one tablet taken three times daily at intervals of not less than four hours, preferably after meals. Once the effect of Rauwiloid is established the dosage should be increased according to the individual's response. Whereas some patients may require as many as two tablets four times a day, the average requirement of Rauwiloid + Veriloid is one tablet four times daily.

"RAUWILOID" and "VERILOID" are Registered Trade Marks

Registered Users:

RIKER LABORATORIES LIMITED

LOUGHBOROUGH · LEICS.

IN EVERY DOCTOR'S BAG...

Where penicillin therapy is indicated, more and more doctors are now using 'Distaquaine' preparations, the ease of administration and convenience of which are particularly suited to the needs of the busy practitioner.

'DISTAQUAINE' brand *G*

Procaine penicillin G for intramuscular administration in aqueous suspension

vials of 300,000, 900,000 and 3,000,000 units.

'DISTAQUAINE' brand *Fortified*

Procaine plus potassium penicillin G for intramuscular administration in aqueous suspension

vials of 400,000, 1,200,000 and 4,000,000 units.

'DISTAQUAINE' brand *Suspension*

'Distaquaine' G in ready-prepared aqueous suspension

vials of 10 ml. (300,000 units per ml.)

Advantages :

* aqueous, containing neither oil nor wax
* easy to prepare and administer
* least possible pain on injection
* effective levels up to 24 hours following administration
* dry syringe unnecessary
* equipment easily cleaned after use

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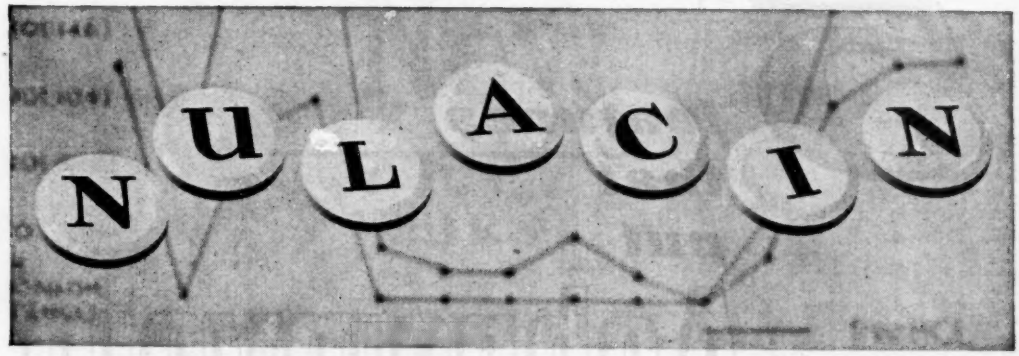
MILK-ALKALI DRIP THERAPY WITHOUT DISCOMFORT



GASTRIC ACIDITY can now be controlled effectively, and without the inconvenience of intragastric milk-alkali drip therapy. This is made possible with the help of NULACIN.

Before NULACIN was evolved, a continuous antacid effect could only be achieved under hospital conditions, and with discomfort to the patient.

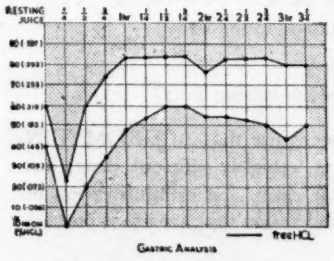
INDICATIONS

NULACIN tablets are indicated whenever neutralization of the gastric contents is required: in active and quiescent peptic ulcer, gastritis, gastric hyperacidity.

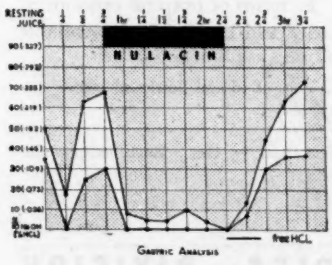
Beginning half-an-hour after food, a NULACIN tablet should be placed in the mouth and allowed to dissolve slowly. During the stage of ulcer activity, up to three tablets an hour may be required. For follow-up treatment, the suggested dosage is one or two tablets between meals.

NULACIN tablets are not advertised to the public and have no B.P. equivalent. May be prescribed on E.C.10. The dispensing pack of 25 tablets is free of Purchase Tax. (Price to pharmacists is 2/-.) Also available in tubes of 12.

NULACIN tablets are prepared from whole milk combined with dextrins and maltose, and incorporate Magnesium Trisilicate 3.5 grs.; Magnesium Oxide 2.0 grs.; Calcium Carbonate 2.0 grs.; Magnesium Carbonate 0.5 grs.; Ol. Menth. Pip. q.s.



Superimposed gruel fractional test-meal curves of five cases of duodenal ulcer.



Same patients as in Fig. 1, two days later, showing the striking neutralizing effect of sucking Nulacin tablets (3 an hour). Note the return of acidity when Nulacin is discontinued.

BIBLIOGRAPHY:

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Further Studies on the Reduction of Gastric Acidity. *Brit. Med. J.*, 23rd January 1954, 183-184
Clinical Investigation into the Action of Antacids. *The Practitioner* July, 1954, **173**:46

NULACIN is available throughout the British Commonwealth, in the U.S.A. and many other countries. It is known as NULACTIN in Canada and Sweden.

Horlicks Limited

PHARMACEUTICAL DIVISION · SLOUGH · BUCKS

features that put

Achromycin*

Tetracycline *Lederle*

way ahead

- ***more rapidly absorbed***
- ***quicker diffusion in body tissues***
- ***greater stability***
- ***more prolonged blood levels***
- ***fewer side effects***

The medical profession has been quick to recognise that ACHROMYCIN represents a striking advance in antibiotic therapy. Not only is it a highly efficient drug, but it is also remarkably safe in use and simple to administer. In most cases, *oral* administration of ACHROMYCIN will secure high and prolonged levels in the blood and tissues that are all-important for therapeutic success.

ACHROMYCIN is effective against Gram-positive and Gram-negative cocci, Gram-negative bacilli, certain protozoa, viruses and rickettsia. In terms of hospital economics, ACHROMYCIN helps to shorten hospital stay, simplifying nursing care and making beds available more quickly.

Capsules: 50 mg.—vials of 25 and 100; 250 mg.—vials of 16 and bottles of 100
Intramuscular: vials of 100 mg.
Intravenous: vials of 250 mg. and 500 mg.
SPERSOIDS† Dispersible Powder: Jars of 36 Gm. and 75 Gm. Each teaspoonful contains 50 mg. of Achromycin Tetracycline.

* Regd. Trade Mark † Trade Mark

Achromycin is at present only available to Hospitals.

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New

FIRST

SAFE AND EFFECTIVE

INTRAMUSCULAR IRON

BENGER LABORATORIES, who introduced the first intravenous iron preparation, now present a new and equally effective iron complex for intramuscular administration. ITS NAME IS IMFERON. The introduction of this new compound considerably simplifies the control of iron deficiency anæmias in both hospital and general practice.

Note these advantages . . .

★ **Imferon** is the first safe and effective iron preparation for intramuscular injection—equally suitable for general practice and hospital use.

★ **Imferon** produces a haemoglobin response identical with that obtained by saccharated oxide of iron. The response is thus predictable.

★ **Imferon** provides the equivalent of 100 mg. of iron per 2 ml. injection or 250 mg. of iron per 5 ml. injection; fewer injections are therefore necessary to administer the calculated total dose.

AMPOULES 2 ml. (100 *mg. Fe.*) boxes 10 and 100.
AMPOULES 5 ml. (250 *mg. Fe.*) boxes 5 and 50.
Fully-descriptive literature on request.
A Technical Information Service is at your disposal.

Imferon TRADE MARK

Iron-Dextran Complex

A PRODUCT OF

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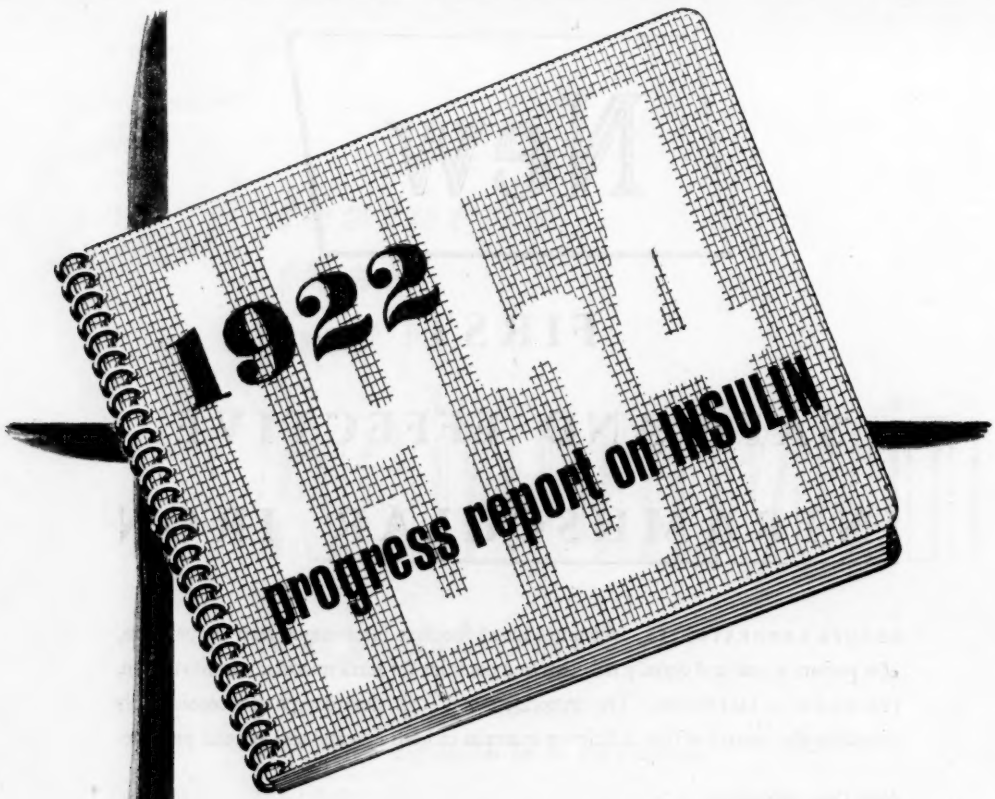

Today there are seven . . .
seven distinct forms of A.B. Insulin, each with a well-defined purpose. Yet little more than thirty years ago there was *no* insulin, and but one ominous prognosis for the victim of diabetes. A.B. research has done much during this time to transform the pattern of insulin therapy and to brighten the outlook for the diabetic patient.

Whether the need is for prompt action, prolonged effect, or a combination of both these factors, there is an A.B. Insulin to meet every individual requirement.

Insulin A.B.
Globin Insulin (with zinc) A.B.
Protamine Zinc Insulin A.B.
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I.Z.S. A.B. (Insulin Zinc Suspension)
I.Z.S. (Amorphous) A.B.
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Detailed literature on request.

A.B. Insulins

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Joint Licensees and Manufacturers

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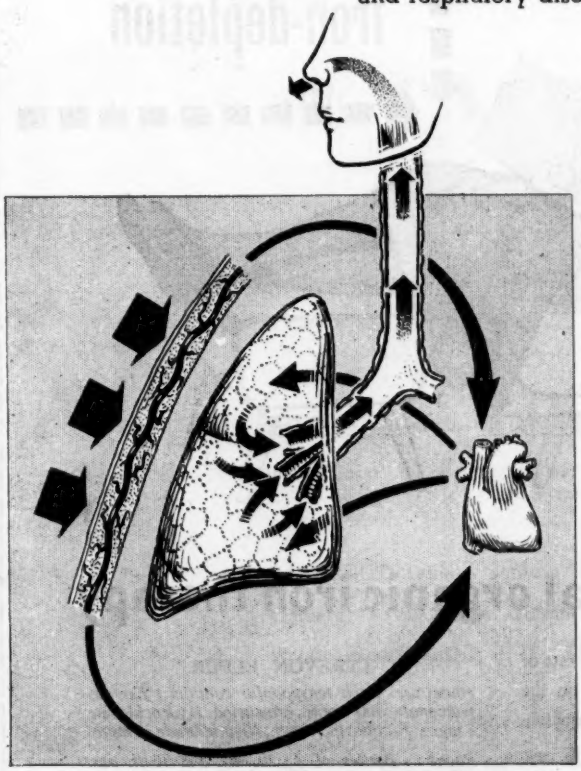
A NEW ADJUVANT IN THE TREATMENT OF RESPIRATORY DISORDERS

Lloyd-Hamol Ltd., of London and Zurich, presents to the medical profession a new decongestive salve, Thoracin, for the symptomatic relief of coughs, cold and respiratory disorders.



This diagram shows how Thoracin components penetrate the skin, are carried by the bloodstream to the alveoli and excreted there to exert their effect.

FORMULA

Phenyl Ethyl Nicotinate	2.0% w/w
Guaiacol Furoate	5.0% w/w
Tetrahydrofurfuryl Salicylate	10.0% w/w
Camphor	3.0% w/w
Eucalyptol	2.0% w/w
Water-Miscible Base to	100.0%

▶ The Thoracin formula is based on the same principles that have made Transvasin so successful in the treatment of rheumatic conditions.

▶ Thoracin is composed of esters of substituted hydroxy aromatic derivatives.

▶ Thoracin achieves the effect of the classic counter-irritant remedies — poultices, plasters and cupping — without irritation of the skin.

▶ Thoracin contains a new ester of Guaiacol that is entirely free from the evil smell and irritant effect associated with this phenol derivative in its pure form. This ester easily penetrates the skin, and is excreted in the alveoli, where it exerts its well-known action.

▶ Thoracin ensures vasodilation of the superficial skin vessels by the use of esters of nicotinic acid.

▶ Thoracin relieves reflex spasm of the pectoral muscles by the use of the tetrahydrofurfuryl-ester of salicylic acid.

▶ Thoracin brings to the alveoli via the blood stream the sedative, antispasmodic, and expectorant properties of camphor and eucalyptus.

THORACIN is available in 1 oz. tubes — basic price 2/6 plus 7½d. P.T. It is an ethical product, and is not advertised to the public. Since a very small quantity is sufficient for each application, the cost of treatment is extremely low. *Samples and literature will be gladly sent on application.*

LLOYD-HAMOL LTD.
11 WATERLOO PLACE, LONDON S.W.1
AND AT ZURICH

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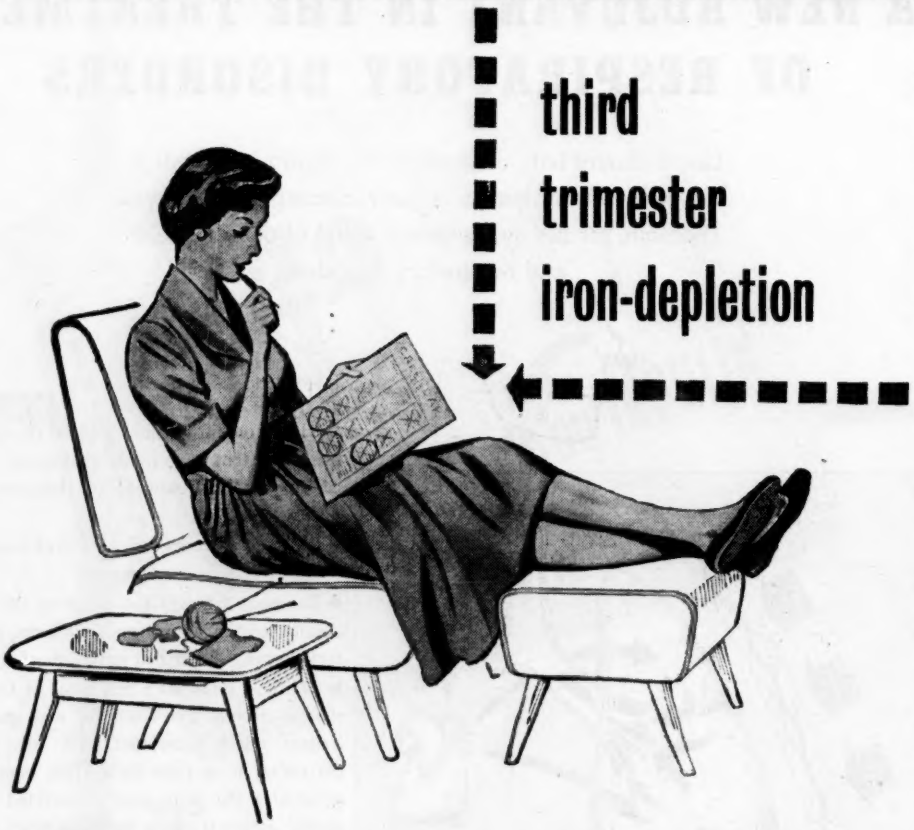
THORACIN

MADE BY THE MANUFACTURERS OF TRANSVASIN



CEREVON . . . oral organic iron therapy

During the third trimester the increasing rate of foetal growth makes heavy demands on the maternal iron reserves which are not adequately met by the normal dietary intake.

The risk of gastric upset from ferro-therapy during this period is considerably lessened by the administration of CEREVON (Ferrous Gluconate)—an organic iron—which will rapidly build up the deficit of iron in the tissue depots to the mutual benefit of the expectant mother and foetus.

CEREVON is available in both tablet and palatable liquid form. In addition to the organic iron Ferrous Gluconate, ELIXIR CEREVON contains the Vitamin B complex, a valuable adjuvant to the ante-natal regime.

CEREVON ELIXIR

FORMULA: *Each teaspoonful contains: Ferrous Gluconate 300 mgm., Aneurine Hydrochloride 1 mgm., Riboflavin 1 mgm., Nicotinamide 10 mgm.*

Packs: Bottles of 4, 20, 40, and 80 fl. ozs.
Prices: 5/-, 24/-, 46/-, 90/-.

CEREVON TABLETS

FORMULA: *Each tablet contains: Ferrous Gluconate 300 mgm.*

Tax Free Dispensing Pack. 1,000 tablets 29/8.

CEREVON

PRESCRIBE CEREVON BY NAME

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respond to ORAL TREATMENT

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CAFERGOT given ORALLY is effective in at least 80 per cent. of attacks.

CAFERGOT tablets contain ergotamine tartrate (1 mg.) and caffeine (100 mg.)
Presentation: Bottles of 20, 100 *and* 500 *tablets.*

References

Proc. Mayo Clin., 1948, **23**, 105.
New England J. Med., 1949, **241**, 896.
J. Mo. med. Ass., 1951, **48**, 963.

Full information on request

SANDOZ PRODUCTS LIMITED

134, Wigmore Street, London, W.1.

SANDOZ

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'VIULES' STREPTOMYCIN

The first British disposable cartridge presentation of a stable Streptomycin Sulphate solution.

'Viules' of 2 ml., each containing Streptomycin Sulphate equivalent to 1G of Streptomycin.

IN BOXES OF 6 AND 100

Improved

'VIULES' PRO-STABILLIN A.S.

'Viules' of Pro-Stabillin A.S. now contain a *new* and *improved* free-flowing aqueous suspension of Procaine Penicillin.

'Viules' containing 300,000 I.U. and 600,000 I.U.

IN BOXES OF 6 AND 100

Viules

'Viules' Disposable Medical Cartridges are first choice in Parenteral Antibiotic Therapy

FOR:—

Pre-measured doses—No wastage—
Aseptic injection in seconds.

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NEW..

effective local antibiotic therapy – minimal risk of sensitisation

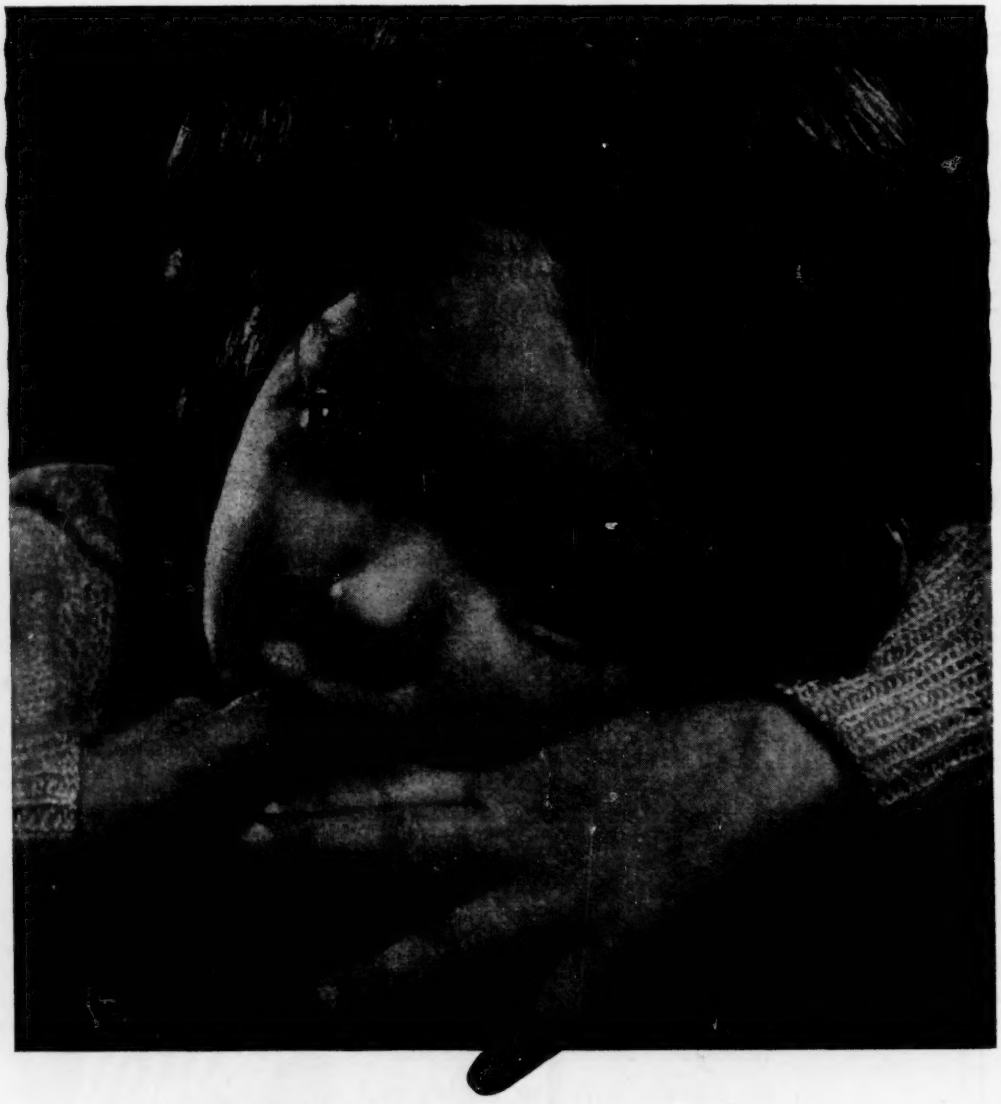
'POLYFAX' combines 'Aerosporin' brand Polymyxin B Sulphate with Bacitracin in a new antibiotic ointment of *very wide antibacterial range*. 'Polyfax' has a prominent place in clinical practice because

- **'Polymyxin' is lethal to many gram-negative organisms, particularly *Ps. pyocyanea*.**
- **Bacitracin is effective against gram-positive organisms.**
- **Drug resistance to polymyxin is unknown, to bacitracin very rare.**
- **Penicillin-resistant strains often succumb to bacitracin.**
- **Risk of skin sensitisation is minimal.**
- **Local absorption is insignificant.**
- **Subsequent systemic use of antibiotics is not prejudiced.**
- **'Polyfax' is so formulated that its antibiotic components are stable and readily diffusible.**

'POLYFAX' is non-irritating and may be applied for long periods if necessary. It is available in tubes of 20 gm. for topical application and as 'Polyfax' brand Ophthalmic Ointment in tubes of 4 gm. with special nozzle.

'POLYFAX' BRAND Ointment

BURROUGHS WELLCOME & CO. *(The Wellcome Foundation Ltd.)* LONDON



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CYTACON

oral vitamin B_{12}—to sharpen appetite and restore vigour and well-being in below-par children

The remarkable 'tonic' action of vitamin B_{12} may well be explained by the fact that the vitamin is apparently necessary for the proper function of enzymes that play a vital part in protein, carbohydrate and, possibly, fat metabolism.

TABLETS: *10 micrograms: 50 and 500; 50 micrograms: 25 and 250* LIQUID: *(25 micrograms per fluid drachm) 6-oz. and 80-oz. bottles*

GLAXO

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PSYCHOLOGICAL ASPECTS OF UTERINE DYSFUNCTION

WILLIAM A. CRAMOND
M.D. Aberd., D.P.M.
DEPUTY PHYSICIAN-SUPERINTENDENT, KINGSEAT MENTAL HOSPITAL, ABERDEENSHIRE

THE causes of uterine dysfunction during labour are unknown, and it is impossible to predict those patients who will develop this condition, which, in severe cases, may lead to a clinical state having dangers for mother and child, comparable with those of grossly obstructed labour.

The course of labour is governed by the relative size of the fœtal head and the pelvis, and by the functional efficiency of the uterus. Slight disproportion or an occipito-posterior position of the head may upset the uterine mechanism, making uterine dysfunction coincide with mechanical difficulty. However, prolonged and difficult labour may still occur even where there is no disproportion and the head is in the occipito-anterior position. Attempts have been made from time to time to classify various types of abnormal uterine activity in labour (MacRae 1949, Jeffcoate et al. 1952); but, as Nixon (1952) stated:

"Whatever classification one adopts and whatever one means by uterine inertia, uterine atony or cervical dystocia, the result is the same—long labour with slow dilatation of the cervix."

Since no uniform definition of uterine dysfunction has been agreed, published reports of it have little value. Stewart and Bernard (1954) classified difficult labour on an ætiological and clinical basis, and defined the dysfunction group as, those cases of vertex presentation where (in primigravidæ) prolongation of labour beyond twenty-four hours, or difficulty in labour, was judged to be due solely to inadequate forces or to resistance of soft tissues. The great majority of "major dysfunction" labours investigated lasted longer than forty-eight hours and were accompanied by maternal distress, and ended in either cæsarean section or forceps delivery. The incidence of major dysfunction in booked married primiparæ in Aberdeen Maternity Hospital in 1948–52 was 2·2%.

Uterine dysfunction is well known to be more common in first than in subsequent labours; and, once vaginal delivery of an infant of reasonable size has been accomplished, dysfunction in a subsequent labour is unusual (Baird 1952a, Stewart 1952, Jeffcoate et al. 1952). There is less agreement about the influence of age, but the accompanying table shows that in Aberdeen primigravidæ

INCIDENCE OF UTERINE DYSFUNCTION BY AGE OF BOOKED, MARRIED, CITY PRIMIGRAVIDÆ DELIVERED IN ABERDEEN MATERNITY HOSPITAL IN 1948–53

Age (yr.)	Incidence of dysfunction (%)	Age (yr.)	Incidence of dysfunction (%)
15–19	0·7	30–34	2·4
20–24	0·6	35+	5·5
25–29	1·6	..	..

the incidence of major dysfunction increases about eightfold as age rises from 15–19 years to 35 years or more. Though it is true, as stated by MacMahon and Gordon (1953), that the frequency of operative delivery increases greatly with age, the incidence of labour lasting longer than forty-eight hours rises from 2% in the age-group 15–19 years to 10% in those aged 35 or more. Most of this increase is due to increased prolongation of the first stage of labour.

Morris (1950) and Greenhill (1950) noted that in the presence of uterine dysfunction there is a greater tendency for the onset of labour to be delayed until the fœtus is postmature. This has been emphasised by Stewart (1952). In primigravidæ in Aberdeen Maternity Hospital, *the incidence of "major dysfunction" labour was 0·9% at* thirty-nine to forty-one weeks' gestation and 3·4% after the forty-first week in 1948–53.

Repeated analyses by Stewart and others in Aberdeen have not shown any correlation between dysfunction *labour and either social class or height, indicating that* the health and nutrition of the mother is unimportant in preventing or producing the condition.

Influence of Psychological Factors

Acute emotional disturbances can cause profound bodily changes. It therefore seems reasonable to consider that emotion may upset the action of uterine muscle during labour. Dershimer (1936) believes that spasm of the voluntary muscles of the pelvic floor, interfering with delivery, may be due to emotional disturbance. Read (1951) follows similar lines when he attributes to fear many of the causes of difficult labour. He postulates a fear→tension→pain syndrome which causes overactivity of the sympathetic nerves supplying the cervical sphincter of the uterus, thus causing neuromuscular incoördination and hence prolongation of labour. The validity of this hypothesis as a matter of physiology remains in serious doubt (Bell 1952, Reynolds 1949).

Apart from Read few obstetricians have discussed the influence of psychological factors on the clinical course of labour. Baird (1952b) doubts if emotional tension often accompanies severe dysfunction. Stewart and Bernard (1954) show that the psychological disturbances presumed to accompany illegitimate pregnancy do not appear to tend to cause difficult labour. Some psycho-analysts see the woman's reaction to childbirth as being essentially determined by elements in her earliest development of which she may be unaware. The type of labour will depend on whether the mother sees the unborn child as a "good" or a "bad" object. If the unconscious fears that the "bad" thing will damage the body by the process of birth, or if there is a dread in exposing it to the world, the result will be prolongation of labour (Deutsch 1947, Jones 1942).

The few direct investigations of psychological factors undertaken hitherto have consisted of the study of single or small numbers of cases isolated from their obstetric context or without adequate controls.

Method

The present investigation was made at Aberdeen Maternity Hospital between January, 1952, and December, 1953, with the active help of the obstetrical staff. 50 patients who had experienced severe uterine dysfunction in a recent labour were contrasted with 50 controls whose labour had been normal. In all the cases the labour was classified by two consultant obstetricians specially interested in difficult labour.

The controls were matched, case for case, with the dysfunction patients in terms of age, height, and social class. All the patients were married; 44 of the dysfunction group and 49 of the control group were primiparæ. 6 of the dysfunction group and 5 of the controls had conceived before marriage, and in 1 control the conception was extramarital. In all the dysfunction patients labour lasted more than twenty-four hours, in most of them more than forty-eight. There was no doubt that the course of labour was seriously upset by the uterine dysfunction, and all were delivered by either cæsarean section or forceps. 47 of the controls were delivered spontaneously within twenty-four hours, and 3 were delivered, after short labours, by low forceps for reasons other than difficult delivery. 2 of the dysfunction patients bore twins; none of the controls did so. The groups were comparable in terms of age, height, social class, and intelligence. Analysis showed no statistically

significant differences between the groups in terms of body build, history of previous illness, menstrual history, history of either pre-eclampsia or hyperemesis, housing, religion, or paid work before or during pregnancy.

Medical care was similar for the two groups. Just over 40 women in each group had been referred to the antenatal clinic by the family practitioner. All had had an opportunity to attend talks on pregnancy and childbirth; 4 of the dysfunction group did so, and another 7 were considered knowledgeable, whereas 14 of the control group attended, and another 6 seemed well-informed. None of the women was cared for by an individual doctor or nurse, but the senior medical and nursing personnel who staffed the antenatal clinic and hospital did not change during the period of study. It was therefore considered that the advantages and disadvantages of a hospital confinement operated equally throughout.

Interviews

In the dysfunction group in 42 consecutive cases the women were first interviewed in the latter part of the first week of the puerperium. To provide sufficient clinical material within a specified time, 8 additional patients, who had been delivered in the Maternity Hospital in 1949–51, were recalled for investigation. Despite the lapse of time these women gave very useful and comprehensive case-histories. All the controls were seen in the latter part of the first week of the puerperium. The complete examination of each patient lasted from two to four hours in two or three sessions. The patient was told by the ward sister the single fact that a doctor wished to see her, so that any overt anxiety in response to an unaccustomed situation could be observed.

The interview opened with a description of the problem in lay terms and a simply illustrated explanation of the influence of emotional factors on bodily function. The patient's sympathy and interest were stimulated by showing her how her experience could help other women; she was assured that the interview was entirely voluntary and confidential. Coöperation was refused by 1 woman. The method of obtaining the patient's history followed a definite pattern, which was sufficiently flexible to allow the patient to tell her story spontaneously and yet rigid enough to ensure that all the patients were exposed to the same battery of questions. The final interview was concluded by applying an intelligence test (the Hillside short form of the Wechsler-Bellevue intelligence scale) and a personality-projection test (Minnesota multiphasic personality inventory), with an explanation of its use.

Results

Only the most interesting medical and psychological results will be given. No significant differences were found between the two groups as regards previous psychosomatic illness (other than peptic ulcer); neuroticism in childhood; sibling rivalry; school, social, and work records; adjustment to marriage and relative fertility.

Home Environment during Childhood and Adolescence

The incidence of broken homes was surprisingly high, being 36% and 32% in the dysfunction and control groups respectively. A broken home was defined as a home environment in which the optimal psychological conditions for achieving a well-integrated mature adult personality were lacking. These were homes where one or other parent had died before the patient had attained the age of 16; homes rendered unhappy by alcoholism in one or both parents, or by obvious antagonism between the parents; and homes broken by divorce or by separation. Homes disrupted by death of a parent while the patient was still in the formative years accounted for just under half the cases in both groups. Alcoholism, separation, or divorce appeared equally throughout.

No essential difference was found between the two groups in respect of the personality types found in the patient's parents—e.g., a harsh intolerant father and a weak indulgent mother, or a quiet ineffectual father and a dominant overprotective mother.

Next the interplay of emotional tension between the parents and the patient was studied, because it was appreciated that this might influence the patient's unconscious attitude to pregnancy and labour. In each group there existed between parents and patient as much warm love and regard as there were unhealthy attitudes of undue attachment or rejection.

Mother's Obstetric History

It has often been said—e.g., by Millar (1950)—that the patient in labour closely identifies herself with her mother. Accordingly it was felt that a study of the mother's obstetric history might be revealing. Much of the information given by the patient was based on hearsay; since no accurate obstetrical data could be obtained, this was accepted because the patient believed it to have been her mother's experience. Of the 47 patients in each group who could supply information 20 described the mother's labour as difficult. These included two maternal deaths in the controls. A typical statement was: "With me she nearly died and had forceps." Only rarely did a patient volunteer an accurate statement—e.g., "Mother unfortunately had rickets, and so I was born by an operation." The impression left on the patient of her mother's feelings about pregnancy and childbirth was difficult to obtain, and consequently difficult to tabulate, but again there seemed to be no significant difference between the groups. The subject of childbirth was usually ignored by the parents, or summed up in the following fashion: "It's a sore, painful time, but it's worth it, and you'll soon forget it."

10–15% of each group had had good instruction and sound attitudes had been inculcated by the mother. Difficult labours in sisters of the patient occurred as frequently in one group as in the other.

Rejection of Feminine Rôle

If prolonged labour was symbolic it might be seen as an unconscious attempt to deny the final compelling evidence of femininity afforded by the birth of a child. There was thought to be evidence of rejection of the feminine rôle where there was in childhood good evidence of tomboyishness—e.g., no interest in dolls, cooking, or housework, and enthusiasm for, and participation in, boys' games, although feminine pursuits were available. In later life a similar trend was obvious in the choice of an occupation which involved rivalry with men—e.g., senior clerk in a Government department, bank teller, women's land army. In addition there was a tendency to dress severely, making no concessions to femininity. Rejection of the feminine rôle and the presence of masculine strivings seemed to occur with the same frequency in each group; 14 and 16 out of 49 cases of dysfunction and normal labour respectively. The information obtained in 1 case in each group was considered insufficient for adequate assessment.

Psychosexual Adjustment and Development

This subject covered the ease with which the fact of menstruation had been accepted; the rôle played by the male sex in the thoughts and emotions of the adolescent girl; and her knowledge of reproduction, and how and when the information was acquired. Investigation of the sexual aspects of marriage included the following: premarital intercourse; dyspareunia (initial, intermittent, or constant); the frequency of coitus; the frequency of orgasm; the attitude towards coitus; and the initiation of love-making leading to coitus.

12 dysfunction cases and 15 controls were considered to be well adjusted; 21 women in each group were moderately well adjusted; and 17 and 13 cases respectively were poorly adjusted. The differences are not statistically significant.

Dreams in Pregnancy

Ever since Freud drew attention to the significance and meaning of dreams they have been recognised as products of unconscious mental activity. It had been hoped to use patients' dreams as a means of understanding their unconscious attitudes towards pregnancy, labour, and the child; but the people of the North-East of Scotland tend to be shy of expressing themselves, and on the question of dreams the patients often became evasive, vague, or frankly negativistic. Those who confessed to dreams tried to avoid recounting them. Most of the dreams reported concerned the baby, which in the dream was already born. They were obviously of a wish-fulfilling nature.

In the *dysfunction group* 19 patients had dreams; 13 of these patients dreamt of the baby. 3 had panic dreams: 1 dreamt that she could not give birth to the child because she was too small; 1 dreamt of ugly misshapen babies; and 1 dreamt of babies having accidents and of stillbirths. One girl, who had a prenuptial conception, dreamt of being scolded by her mother "for getting off the bus too soon." The remaining dreams appeared to have no connection with the pregnancy.

Of the *controls* 25 admitted to dreaming: 9 of these dreamt of the baby actually existing in their arms and of all being well. Rather more of the controls, however, had unpleasant dreams indicating anxiety about, or resentment towards, the pregnancy. For example, 1 girl dreamt of being unable to have a baby and of having a difficult labour; 1 dreamt of being crushed or tortured; 2 had anxiety dreams involving premature birth, with no doctor in attendance; 1 woman dreamt of cats, which she detested; and 1 in her dream allowed babies to fall, then picked them up, only to let them fall once more. 1 woman related how, in a dream, she was single again and was quarrelling with her mother, whom she consciously disliked. It is seen, therefore, that rather more of the dysfunction group had dreams indicating pleasurable anticipation of the child, whereas the dreams of the controls revealed more anxiety; but the difference between the groups is not statistically significant.

Anxiety in Pregnancy

Much has been written about the antenatal fears and anxieties of primiparous women (Hall and Mohr 1933, Cohen 1943, Kosmak 1945, Hirst and Strousse 1938, and others). Many of the fears expressed are rationalisations of an unconscious rejection of pregnancy—e.g., "We cannot afford to have a baby." Some of the fears—e.g., of death and of deformity of the infant—are common to all women, often at a conscious level. Other causes of fear are illegitimacy, marital conflict, parental disapproval, and fears concerning heredity. The less mature and stable a patient the more these fears will upset her and produce signs and symptoms of an anxiety state. Since many workers believe that anxiety and prolongation of labour are correlated, it was necessary to determine the amount of anxiety experienced by the patients in this series. Excessive anxiety was considered to be present when the patient had slept so badly that she had required a sedative in the antenatal period, or where there was a history of dreams with a strong anxiety content. These women were restless and unduly concerned about their health; they could not disregard, or be reassured about, old wives' tales; they feared death in labour either for themselves or for the baby. This group was much more emotional than usual—e.g., they would break down and weep if they read in the newspapers of a child's death from an accident. Women with moderate or slight anxiety showed proportionately fewer of the foregoing symptoms.

18 of the controls had an excessive amount of anxiety, compared with 13 in the dysfunction group, but the difference is not statistically significant.

Behaviour in Labour

It was entirely impracticable for each woman to be seen in, or followed through, her labour by me, but the labour-ward sister recorded in the case-sheet a short summary of the woman's behaviour in labour. This observation alone was insufficient for comparison, because it depended so much on the individual's ability to observe and report. By combining the sister's summary with the written comments of the medical and other nursing staff throughout the entire course of labour, and by giving consideration to the amount and type of sedation required, a composite picture could be obtained on which to grade the patient's performance in labour. The performances were assessed according to the following standards:

Groups 1 and 2 were always under control, but group 2 became distressed in either the first or the second stage of labour. Little or no sedation was required.

Group 3 presented an average performance—e.g., a woman who became distressed but only lost control fleetingly and responded to rather more sedation than group 2.

Groups 4 and 5 lost control completely, group 4 in either the first or the second stage, and group 5 in both stages.

On this assessment no difference between the experimental and the control groups could be demonstrated.

Attitude to Breast-feeding

This was classified under three headings: good, adequate, and poor.

A *good* attitude implied that the new mother felt an access of love sweep over her when feeding her infant; that she believed that by breast-feeding not only was she doing the best for the baby but also she could become emotionally closer to the child.

The attitude was *adequate* if breast-feeding was being done only for the baby's sake, as a matter of duty, and to please the nurses.

Mothers with a *poor* attitude included those who disliked the practice, thought it was animal-like, or felt nauseated by the sight of breast-feeding. This attitude appeared to indicate a further rejection of the rôle of a woman and a mother.

The results showed no great difference between the groups. Of both groups taken together the attitude of 30% was considered to be good, 34% adequate, and 36% poor. There was no statistically significant difference in the numbers of either group still breast-feeding at the six-week postnatal visit.

Psychopathology

The main psychopathological trends noted were masturbation guilts and latent homosexuality along with masculine striving. In 10 of the dysfunction group and in 5 of the controls there was positive evidence that the patient was greatly worried about masturbatory practices, and believed that she would be punished for the forbidden act. 9 of the dysfunction group and 14 of the controls showed signs of masculine identification, and of these 4 and 5 in the respective groups were considered to be latent homosexuals. A diagnosis of latent homosexuality was considered justifiable if there was evidence of strong identification with the father, and of hate or fear towards the mother. There had been pronounced tomboyishness in childhood in some cases, whereas in others there was a history of excessive parental disapproval of sexual interest. This implied, for the child, a taboo on relationship with men. In general these women found their most intimate friendships in people of their own sex.

In 5 cases in the dysfunction group, compared with none in the controls, there was a combination of circumstances, events, and attitudes leading one to postulate that the patient had the unconscious wish to bear her father's child.

None of the differences are, however, statistically significant.

Usual Method of Expressing Tension

Every woman was asked with what bodily symptom or symptoms she reacted to strain and stress. Her own

words were used in recording this information, and the findings were grouped under the following headings: headache and/or inability to concentrate; functional dyspepsia; tremor and sweating; frequency of micturition and diarrhœa; fatigue and apathy; motor restlessness; palpitations; irritability and tears; insomnia; and tension in musculature.

Adequate information was obtained from 40 of the experimental group and 38 of the controls. Where a patient had more than one complaint all were noted. The only significant finding was that tremor and sweating, as a method of discharging tension, occurred in 5 of the 40 in the dysfunction group and in 18 of the 38 in the controls. The probability that this difference is due to chance is less than 5%.

Peptic Ulcer

Apart from constipation, the incidence of which was similar in both groups, the most common psychosomatic manifestation was peptic ulcer. In only a few cases had the diagnosis been confirmed by radiography, but the remainder gave typical histories. 18% of the dysfunction group gave histories suggesting ulcer compared with 4% of the controls; the probability of this difference occurring by chance was just over 5%.

Anxiety at Interview

As already described, the patient was quite unprepared for the interview; hence the presence or absence of somatic signs of anxiety produced by the stress of an unfamiliar situation could be observed. Attention was paid to tremor, sweating, tachycardia, restlessness of hands and fingers; signs of tension in posture and attitude, and speech—e.g., "press of talk" and forced laughter. Tension was found to be obvious in half the controls and in only a quarter of the dysfunction group. Most of the latter group were apparently relaxed and at ease, showing no distress at all at the interview. This observation was one of the most striking findings, and statistically the probability of the difference being due to chance is 2·5%.

Previous Psychoneurotic History

Of the 100 women only 2, both of them controls, had previously been under psychiatric care. Both had had anxiety states responding to treatment. 17 patients in the dysfunction group and 13 of the controls gave evidence of previous psychoneuroses; these were for the most part mild but none the less quite definite. Most of the neurotic illnesses were anxiety states, with or without reactive depression. Only 1 patient, a woman with dysfunction, had had a psychotic breakdown (an acute schizophrenic reaction), which had lasted about three weeks. There was no significant difference in the incidence of previous psychoneurosis in the two groups. It is, however, of general interest that 30% of the women in the complete series had had a previous and clinically recognisable psychoneurosis. This figure of the incidence of neurosis in a "normal" population gives some idea of the amount of social inefficiency which must arise from minor degrees of mental ill health.

Minnesota Multiphasic Personality Inventory

The Minnesota multiphasic personality inventory (M.M.P.I.) was designed by Hathaway and McKinley (1940) to provide scores on all the more important traits of personality. It was selected for use in this investigation after careful consideration of the choice of personality-projection tests available. Writing on the validity of personality inventories Ellis (1946) stated that the M.M.P.I. appeared to be the most promising of its kind, a view supported by Eysenck (1950). The inventory comprises 550 statements covering many aspects of physical, mental, and emotional life. The patient is required to apply each statement to herself, deciding whether it is true or false in this context. Included in the inventory are 55 items primarily related to problems of masculinity and femininity, and 15 items designed to indicate whether the person is trying to place herself in an improbably acceptable light. The test is scored to provide a measure of several personality traits—e.g., hypochondriasis, depression, hysteria, psychopathy, and sexual interest. The test incorporates several validating factors designed to show up contradictions in the patient's replies. This allows the scorer to judge the accuracy of the results.

It had been hoped that a comparison of the results given by the two groups of women in this test would show that certain items of the test had a discriminatory power which could be used for predictive purposes in the antenatal period. This expectation was not fulfilled, the only significant difference between the groups being in the L or "lie" scale. It was found that significantly more of the women in the dysfunction group were returning high scores in the L scale compared with the controls. The L scale detects the person who wishes to place herself in a highly conventional and socially acceptable light. There are 15 items in the test, so expressed that even the most mature person answering them honestly must confess to deviations from what is usually considered socially desirable conduct. 45% of the dysfunction group had L scores of 60 or more, compared with 20% of the controls. This difference is significant at the 2% level. There was no other significant difference between the groups either in respect of the personality traits or in the answers to the individual items of the test.

Discussion

Though on many counts there seemed to be no difference between the two groups, experience led to the conclusion that many of the dysfunction patients possessed, in common, certain traits or characteristics which were not so often seen among the controls.

The essence of a "dysfunction temperament" seems to lie in the following:

(1) A tendency towards peptic ulcer or symptoms suggesting this condition.

(2) Little overt anxiety in the presence of an unfamiliar situation.

(3) Tremor and sweating less often complained of as expressions of anxiety.

(4) A bias towards rigidly conventional and socially desirable standards of conduct.

The typical case of "dysfunction temperament" showed little or no anxiety at interview, remaining apparently at ease. Yet interviewing might be difficult, since confidences were not readily imparted, and a pleasant coöperative manner often concealed a reserved attitude. This tendency to keep one's own counsel and to conceal inmost thoughts was mirrored in physical health, for emotion was repressed during periods of tension and anxiety. Presumably tension was discharged by internal pathways, which might explain the high incidence of peptic ulcer.

After the investigation had been completed, my attention was drawn to a "manifest anxiety scale" derived from the M.M.P.I. by Taylor (1953). This scale consists of 50 items designed to show clinical evidence of anxiety. The scale did not differentiate between the dysfunction and control patients in this study, but it showed a very significant difference between patients who had been classified as having the "dysfunction temperament" and the remainder.

In the dysfunction group 22 of the 40 patients who completed the M.M.P.I. were thought to have the "dysfunction temperament," and of these 14 (63%) had scores of 10 or less (indicating little manifest anxiety) on Taylor's anxiety scale; of the remaining 18 dysfunction patients not showing the "dysfunction temperament" only 2 (11%) scored 10 or less. Of the controls 6 of 38 showed the "dysfunction temperament," and 5 of these had low scores on the anxiety scale, compared with 10 of the remaining 32 "normal" patients.

In this way the M.M.P.I. data helped to provide objective confirmation of the reality of the "dysfunction temperament." It should perhaps be made clear that many of the patients judged to have the "dysfunction

temperament"—i.e., to conceal outward expression of anxiety—considered themselves to be anxious worrying people. All the women, in both groups, could become anxious and tense when under strain. The difference, in fact, lay in the method of expressing tension. The controls tended to express it overtly, to become restless, to have tremor and sweating, whereas dysfunction patients, on the other hand, often suppressed or repressed their emotion and behaved in a more reserved and even suspicious manner.

The "dysfunction temperament" occurred in just over half the cases of dysfunction compared with 12% of the controls, and clearly is not the only factor predisposing to disordered uterine action. It is most likely that uterine dysfunction has a multiple ætiology. With present knowledge it is reasonable to say that a primigravida aged more than 30 who is not in labour by the forty-second week of pregnancy, whose child is lying in the occipito-posterior position, and who is reserved, unforthcoming, and does not show overt anxiety, has a greatly increased risk of developing uterine dysfunction. In the series of 50 cases of severe dysfunction studied only 7 did not show any of these characteristics.

In view of the low incidence of dysfunction and the multiple ætiology of uterine dysfunction the use of psychiatric methods of prediction in the antenatal period seems hardly worth while. Even if one could isolate those patients who have the "dysfunction temperament," by no means all of them would develop dysfunction. In any case, it would be impossible to alter temperament by treatment during pregnancy. There therefore seems to be little or no scope for psychotherapy during pregnancy in the prevention of uterine dysfunction.

In this investigation 50 "normal" women were seen in the control group. Of these, 47 had easy spontaneous deliveries; the 3 who required forceps did so at the end of labour, which lasted just over seven hours, when the fœtal head was already on the perineum. Signs of tension were shown by 25 of this group in an unfamiliar situation—i.e., at interview—whereas 13 of the group had had a psychiatric illness or were considered to be unduly vulnerable. In addition 18 were thought to be excessively anxious in pregnancy. It is therefore clear that fear, emotion, and anxiety play no part in the outcome of labour from the practical obstetrical point of view—i.e., in determining the length of labour or whether forceps will be necessary.

This evidence supports the views of Jeffcoate et al. (1952) and others who have emphasised the limitations of relaxation and similar programmes designed to give the patient confidence on the outcome of labour. Nixon (cited by Mandy et al. 1952) has in fact shown that a group of women who practised relaxation exercises during pregnancy had the same average length of labour as a group of controls who did not.

The results of this investigation, while not testing the hypothesis directly, do not offer any basis for believing that simple methods of psychotherapy, given in the antenatal period to outwardly tense or nervous women, would have had any effect on the action of the uterus during labour. It is felt, however, that any method alleviating mental pain is valuable. Education, relaxation techniques, and understanding on the part of the obstetrician of the common fears of pregnant women are important in that they often help to produce a calm and happy mental attitude.

Summary

A pilot investigation of psychological factors in uterine dysfunction is described.

50 cases of major uterine dysfunction were compared with a control group which was matched for age, height, and social class.

A "dysfunction temperament" is described, characterised by suppression or repression of feelings of tension.

The patients who exhibited this temperament tended to be reserved, even suspicious, and had difficulty in talking about themselves or their problems. It was noted, too, that they were more conventional than normal.

The "dysfunction temperament" was found in 54% of the dysfunction cases, compared with 12% of the controls.

This investigation confirms that uterine dysfunction is of multiple ætiology, where age, prolongation of the gestation period, the occipito-posterior presentation, and personality all play a greater or less part in any one case.

It is thought that psychiatric methods of prediction and prevention in the antenatal period would have no effect on the occurrence of uterine dysfunction.

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INTRAMUSCULAR IRON

A CLINICAL TRIAL IN PREGNANCY

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SAINT MARY'S HOSPITALS FOR WOMEN AND CHILDREN
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PREGNANT women tend to be deficient in iron (Lundström 1950, Ventura and Klopper 1951), and the administration of iron will nearly always produce hæmoglobin levels in late pregnancy higher than those formerly accepted as physiological (Holly 1951, Benstead and Theobald 1952, Davis and Jennison 1954). When anæmia is found during pregnancy, the time available for treatment is limited; and, if it is not discovered until the last few weeks before term, energetic treatment is required to ensure a satisfactory hæmoglobin level at delivery.

Iron by mouth is sometimes not tolerated by pregnant women, who may have gastric disturbances before therapy is begun. Moreover, in a busy clinic it is difficult to ensure that each patient is actually taking the iron prescribed. The introduction of iron preparations suitable for intravenous injection has enabled those patients who cannot tolerate oral iron, or who are still

TABLE I—MEAN HÆMOGLOBIN VALUES BEFORE AND AFTER TREATMENT

Initial Hb (g. per 100 ml.)	Group	Before treatment			6 weeks from start of therapy			"Final" (7–18 weeks)*		
		No. of cases	Hb		No. of cases	Hb		No. of cases	Hb	
			g. per 100 ml.	% Haldane		g. per 100 ml.	% Haldane		g. per 100 ml.	% Haldane
Less than 9	1	22	8·0	54·1	22	11·5	77·9	15	12·5	84·3
	2	..	..	..	..	..	..	..	..	..
9–10 ..	1	24	9·6	64·9	24	12·3	82·8	15	13·6	88·0
	2	15	9·6	64·9	15	11·4	77·6	..	..	..
More than 10	1	4	10·5	70·9	4	12·7	86·0	3	12·8	86·3
	2	3	10·6	71·6	3	11·8	79·7	..	..	..
Total ..	1	50	9·0	60·8	50	12·0	81·0	33	12·7	86·0
	2	18	9·8	66·1	18	11·6	78·1	..	..	..

* These figures are calculated from the last Hb estimation before delivery or the last estimation available in patients not yet delivered.

anæmic late in pregnancy, to be treated successfully (Govan and Scott 1949, Kartchner and Holmstrom 1950, Holly 1951, Scott and Govan 1951, Klopper and Ventura 1951, Briscoe 1952).

Nevertheless intravenous therapy with iron has certain drawbacks: it must be administered by a doctor; extravenous leakage can be very painful; and there may be unpleasant general reactions (Nissim 1954). A less toxic preparation suitable for intramuscular injection would solve many of these problems, and we describe here our experiences with such a preparation in the antenatal clinics of Saint Mary's Hospitals, Manchester.

The Preparation

The preparation used was a dextran-iron complex known as 'Imferon' (Benger). It contains 50 mg. of iron per ml.—i.e., it is $2^1/_2$ times as concentrated as the usual intravenous preparations. The solution is neutral, isotonic, and suitable for either intravenous or intramuscular injection. It is more stable than saccharated iron oxide, and serum-iron levels higher than 2000 µg. per 100 ml. have been attained without producing untoward reactions (Fletcher).

The Patients

With this preparation we have treated 225 patients (126 antenatal, 59 puerperal, and 40 gynæcological), but here we report only the results obtained in 68 pregnant women followed for six weeks or more and 13 women delivered within six weeks of the commencement of therapy.

Some of the patients were given this preparation because of inability or refusal to take oral iron; most were treated primarily with the dextran-iron complex, and a few had had reactions with intravenous saccharated iron oxide.

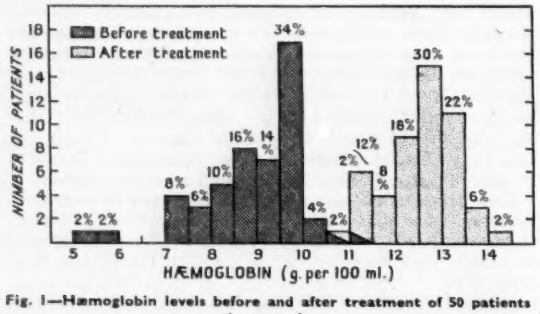

Fig. 1—Hæmoglobin levels before and after treatment of 50 patients in group 1.

Methods and Dosage

Initial estimations of the hæmoglobin, packed-cell volume (P.C.V.), and mean corpuscular hæmoglobin concentration (M.C.H.C.) were made from venous blood, and a blood-film was examined at this time. Patients with a M.C.H.C. greater than 31 g. per 100 ml. and some of the more anæmic patients, underwent marrow biopsy to exclude megaloblastic anæmia. No marrow examined from any patient treated with the dextran-iron complex contained any iron demonstrable by the method of Davidson and Jennison (1952). Intermediate hæmoglobin estimations and reticulocyte-counts were made from capillary blood, but estimations of hæmoglobin and P.C.V. were made at standard intervals from venous blood.

All the hæmoglobins were estimated as oxyhæmoglobin on one photo-electric absorptiometer. The machine was checked regularly with the Medical Research Council samples of Hb, and Hb 100% is equivalent to 14·8 g. per 100 ml.

Dosage

The first few patients were given 100 mg. (2 ml.) daily for ten days. When it was found that this was well tolerated, the dose was increased to 250 mg. (5 ml.) daily, or on alternate days if the patient lived a considerable distance from the hospital. The total dose was estimated on the assumption that 250 mg. would increase the hæmoglobin of non-pregnant patients by 10%. To this calculated dose was added 500 mg. to allow for depletion of iron, increased blood volume, and the demands of the fœtus:

$$\frac{100 - \text{observed Hb\%}}{10} \times 250 + 500 \text{ mg.}$$

50 of the 68 women received this dosage (group 1), as did the 13 delivered within six weeks of the start of

TABLE II—AVERAGE INCREASES IN HÆMOGLOBIN AT 2-WEEK INTERVALS ACCORDING TO DEGREE OF ANÆMIA

—	Initial Hb (g. per 100 ml.)									Total		
	Less than 9			9–10			More than 10					
	No. of cases	Increase		No. of cases	Increase		No. of cases	Increase		No. of cases	Increase	
		g. per 100 ml.	% Haldane		g. per 100 ml.	% Haldane		g. per 100 ml.	% Haldane		g. per 100 ml.	% Haldane
Group 1:												
2 weeks	22	1·55	10·5	24	1·07	7·2	4	0·47	3·7	50	1·23	8·3
4 weeks	..	2·72	17·7	..	2·03	13·7	..	1·40	9·5	..	2·24	15·1
6 weeks	..	3·52	23·8	..	2·65	17·9	..	2·24	15·1	..	2·98	20·2
"Final"	15	4·50	30·2	15	3·41	23·1	3	2·28	15·4	33	3·72	25·2
Group 2:												
2 weeks	..	..	..	15	0·79	5·4	3	0·29	2·0	18	0·71	4·8
4 weeks	..	..	..	..	1·48	10·0	..	0·74	5·0	..	1·34	9·3
6 weeks	..	..	..	..	1·88	12·7	..	1·21	8·1	..	1·78	12·0

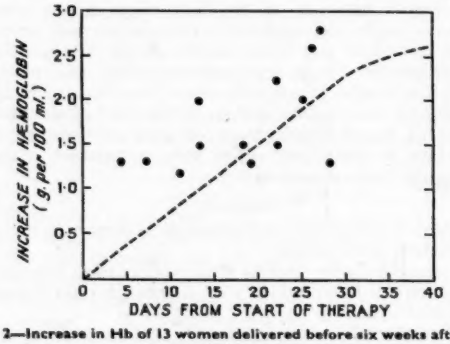

Fig. 2—Increase in Hb of 13 women delivered before six weeks after the start of therapy.

TABLE III—AVERAGE INCREASES OF HÆMOGLOBIN AT 2-WEEK INTERVALS ACCORDING TO STAGE OF PREGNANCY

	Stage of pregnancy (weeks)								
	10–20			20–30			30–40		
	No. of cases	Increase of Hb		No. of cases	Increase of Hb		No. of cases	Increase of Hb	
		g. per 100 ml.	% Haldane		g. per 100 ml.	% Haldane		g. per 100 ml.	% Haldane
Group 1:									
2 weeks	13	1·05	7·1	15	1·26	8·5	22	1·32	8·9
4 weeks	..	2·13	14·4	..	2·24	15·1	..	2·31	15·6
6 weeks	..	2·95	19·9	..	3·24	21·9	..	2·90	19·6
"Final"	11	3·95	26·7	13	4·07	27·5	9	3·12	21·1
Group 2:									
2 weeks	6	0·55	3·7	7	0·89	6·0	5	0·68	4·6
4 weeks	..	1·52	10·3	..	1·24	8·4	..	1·39	9·4
6 weeks	..	1·66	11·2	..	1·64	11·1	..	2·16	14·6

therapy. The remaining 18 received a standard dose of 500 mg. in two injections (group 2) in an attempt to assess the utilisation of the dextran-iron complex more accurately and to observe how long any improvement in the hæmoglobin would be maintained as pregnancy progressed.

All the women were given the dextran-iron complex by deep intramuscular injection either into the upper and outer quadrant of the buttock or into the outer aspect of the thigh. Alternate sides were used for successive injections.

Results

As was noted by Scott and Govan (1951) using intravenous iron, the response during the first week was sometimes barely significant, although the women with a severe deficiency of iron often responded very rapidly.

Reticulocyte peaks varied from 2 to 9% (mean 3·5%) and occurred about the seventh day. An increase in the P.C.V. was often the first indication of response and was presumably due to the appearance of the larger reticulocytes in the peripheral blood. The mean initial P.C.V. was 30·9%, compared with the mean P.C.V. of 39·5% at six weeks after the start of treatment.

The mean initial hæmoglobin of the 50 women in group 1 was 9 g. per 100 ml. (60·8% Haldane). This rose to 12 g. per 100 ml. (81·0%) in six weeks, and to 12·7 g. per 100 ml. (86·0%) in 33 women followed for longer than six weeks (table I). The distribution of the hæmoglobin levels before and after treatment are shown in fig. 1.

The increase of hæmoglobin in group 2 was less than in group 1.

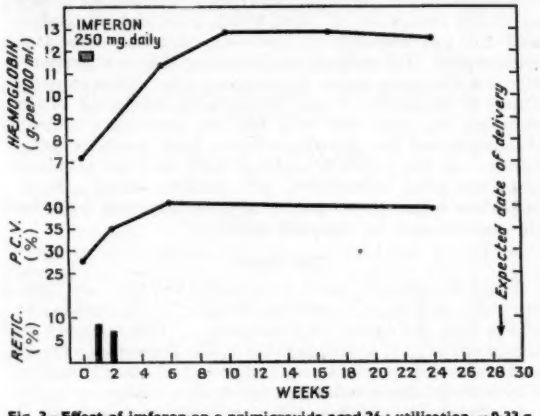

Fig. 3—Effect of imferon on a primigravida aged 26: utilisation = 0·33 g. of Hb per 100 mg. of imferon.

The increases observed at two-weekly intervals, and the "final" increase achieved by the 33 patients followed longer than six weeks, are shown in tables II and III. As is to be expected, the rate of increase is related more to the degree of anæmia than to the stage of pregnancy. In group 2 it was considerably slower.

The response of 13 women who were delivered before six weeks had elapsed from the commencement of therapy is shown in fig. 2, in which the dotted line represents the mean values of 13 women delivered after six to eight weeks' therapy. It will be seen that all the women were making satisfactory progress before delivery.

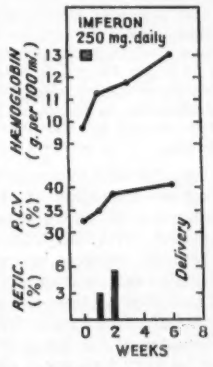

Fig. 4—Effect of imferon on a primigravida aged 24: utilisation = 0·26 g. of Hb per 100 mg. of imferon.

Fig. 3 shows that after the dose calculated to be the equivalent of the deficit of iron has been administered, the hæmoglobin can be maintained at a satisfactory level for the rest of the pregnancy. This is not always so, and a few of the patients treated very early in pregnancy required a further dose.

The rapid response of a case during the last six weeks of pregnancy is shown in fig. 4.

Fig. 5 illustrates a patient who received a small dose (500 mg.) initially and required a further 250 mg. later.

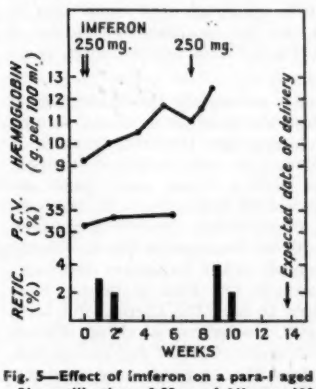

Fig. 5—Effect of imferon on a para-I aged 21: utilisation = 0·38 g. of Hb per 100 mg. of imferon.

Discussion

Rate of Response

The value of this new dextran-iron complex is best judged by comparing our results with those obtained in pregnancy by previous workers using intravenous saccharated iron oxide.

Govan and Scott (1949) treated 25 women with Hb less than 9·6 g. per 100 ml., 21 of whom had initial Hb less than 8 g. In the first week "almost all" the women had an increase of 1·3 g. per 100 ml.

Kartchner and Holmstrom (1950), who treated 25 women with initial Hb values between 5·4 g. and 10·5 g. per 100 ml., reported an average increase of 1 g. at one week and 2 g. at two weeks from the start of treatment. Of these women 9 with initial Hb less than 10 g. had an average increase of 2·8 g. in the average time of 3·7 weeks before delivery.

In a further report on 78 pregnant women Scott and Govan (1951) divided them into those with an immediate and those with a delayed response. The patients showing an immediate response had an average increase in the first week of 1·3 g. when the initial Hb had been less than 8 g., and an increase of 1·5 g. when the initial Hb had been more than 8 g. The average delayed responses were 0·2 g. and 0·3 g. respectively. Although these workers did not mention it, the over-all average increase appears to have been about 1 g. per 100 ml. in the first week, with a progressive reduction in the two successive weeks.

Klopper and Ventura (1951) reported responses from 0·5 to 5·6 g. per 100 ml., but did not state how long these took.

Holly (1951) treated 11 patients during pregnancy and obtained responses of from 1·4 to 3·9 g. in three weeks.

94 pregnant women were treated by Briscoe (1952). In those whose treatment began when they were less than twenty-eight weeks pregnant, the average increase in Hb was 1·54 g. per 100 ml. in seven to fifteen weeks. In those whose treatment began after twenty-eight weeks it was 1·84 g. in three to seven weeks. 7 patients with initial Hb of less than 8 g. per 100 ml. showed an average increase of 2·9 g. in four weeks.

As the rate of response varies greatly according to the degree of anæmia at the start of therapy (as shown in table II), an exact comparison of our cases with those treated with intravenous saccharated iron oxide by previous workers cannot be made in the absence of detailed information about the initial hæmoglobin values. The different time-intervals used also make comparison difficult. Our figures for the 50 cases in group 1, showing increases of 1·2–3·9 g. (mean 2·24 g.) at four weeks, seem to be very like those of Holly (1951) and slightly lower than those of Govan and Scott (1949), Scott and Govan (1951), and Kartchner and Holmstrom (1950), but better than those of Briscoe (1952). 10 of our patients with initial hæmoglobin below 8 g. per 100 ml. increased by 3·2 g. per 100 ml. in four weeks, compared with 2·9 g. in Briscoe's series.

The patients given a standard dose of 500 mg. responded more slowly and in some cases did not maintain the initial increase (fig. 5). This is to be expected in many cases, because this dose is usually insufficient to restore the depleted stores of iron. Enough iron must also be provided for the fœtus and for increased formation of maternal hæmoglobin during the later weeks of pregnancy.

Utilisation

It is impossible to assess accurately the utilisation of any iron compound unless the changes in blood volume are measured. These changes are probably greater in pregnancy than in anæmia in non-pregnant women. The unknown demands of the fœtus also upset any attempt to calculate the actual utilisation. It has been suggested by Hamilton et al. (1954) that in pregnancy an extra 400 mg. of iron for changes in blood volume and 500 mg. for the demands of the fœtus are required.

In non-pregnant women, it has been estimated that 24·5 mg. of iron is required to raise the hæmoglobin level by 1% (Heath et al. 1932, Goetsch et al. 1946, Nissim 1947). Wilkinson (1950) considers that 37 mg. is required, but it is generally recognised that in pregnancy apparent utilisation is considerably below these values.

In the present series the utilisation in group 1 was 0·27 g. of hæmoglobin for every 100 mg. of iron injected —i.e., 55 mg. of iron for a 1% increase in hæmoglobin. The values for individual patients varied from 0·17 to 0·45 g., the higher values occurring in early pregnancy. The response at this stage is similar to that in non-pregnant women. Considering that all these patients received 500 mg. more than the calculated dose, these results compare very favourably with the figure of 0·3 g. (maximum 0·4 g.) of Scott and Govan (1951) and 0·17 g. of Kartchner and Holmstrom (1950). Holly (1951) did not give any figures, but in his 11 cases the utilisation before delivery was 0·2–0·4 g. Klopper and Ventura (1951) gave utilisation values of 0·23–0·63 g. (mean 0·44 g.), but details of the stage of pregnancy and follow-up are not given.

In group 2 the average utilisation at six weeks from the start of therapy was 0·35 g. per 100 mg. of iron (42 mg. of iron for an increase of 1%), with a range of 0·24–0·44 g. This probably represents the maximum utilisation that can be expected in pregnant women.

Toxic Reactions

Local.—The injection of 5 ml. of any solution into a muscle will give rise to some discomfort in some people. After the injection of 5 ml. of the iron-dextran complex few patients complained unless asked specifically about discomfort at the site of the injection. Some who had previously had penicillin injections stated that the iron complex was less painful. No induration or abscess formed, but in a few cases the inguinal lymph-glands became slightly enlarged and tender. If the injection is given deeply into the muscle, there is little staining of the skin; and any discoloration has disappeared in a few weeks. If the injection is given into the subcutaneous tissues, staining is more intense and naturally persists longer. It was obvious during this study that the skill and care of the person giving the injections does much to minimise local discomfort and staining, and it is significant that only 2 patients failed to attend for further injections.

General.—The most common general toxic reaction seems to be slight pyrexia; but its incidence cannot be determined, because most of these women were out-patients. Headache was the next most common complaint and was usually associated with the pyrexia. Nausea and vomiting occurred in 6 patients, but the significance of these symptoms is difficult to assess during pregnancy. 5 of these patients had the dose reduced to 2 ml. daily; this dose was tolerated better and enabled the total prescribed amount to be given. An erythematous rash appeared in 1 patient a few days after completion of the course. One patient became very depressed after having 1000 mg., and no further injections were given. Only 1 patient out of 225 had what might be called a serious reaction: she had had excessive sickness in the early months of pregnancy, and immediately after the second injection of 250 mg. she had vomiting followed by syncope.

These reactions are similar to those produced by intravenous saccharated iron oxide (Nissim 1954), but in our experience are less severe. 3 of the patients who complained of nausea and vomiting had chronic pulmonary tuberculosis, which has previously been suggested as a contributory factor in the ætiology of reactions to intravenous iron therapy (Librach 1953). In other women, whom we treated as inpatients and who are not included in this series, the pyrexia seldom exceeded 99·5°F and seemed to be no more common that that observed after intravenous iron injections.

Subjective Improvement

Nearly all the patients reported that they felt better within forty-eight hours of the first injection. Fatigue and anorexia disappeared quickly, presumably owing to the rapid saturation of the iron-depleted tissues. That the dextran-iron complex is quickly absorbed was shown by the appearance of iron in the bone-marrow within forty-eight hours.

Indications

Unfortunately the ease with which this preparation can be administered might easily lead to excessive dosage or to the treatment of cases which have not responded, and will not respond, to iron—e.g., anæmia associated with sepsis. The indications for using this new preparation are the same as for intravenous iron. Thus in pregnancy it is mainly of use for patients intolerant of, or resistant to, oral iron and for the treatment of iron deficiency not discovered until the later weeks of pregnancy. As the product contains more iron per millilitre than the usual intravenous preparations, fewer attendances are required—an important consideration both for the patient and for hospital staffs.

Conclusion

From the present series it appears that this new iron-dextran complex is a notable advance in the treatment of the iron deficiency of pregnancy. The response to treatment with it is comparable to the response to treatment with intravenous preparations, and the utilisation is also of the same order.

Provided that the injections are given with care, local side-effects are seldom important. General reactions

which occurred in about 20% of all cases, were mainly very mild.

In busy antenatal clinics intramuscular iron is more convenient than intravenous iron for the treatment of patients needing parenteral therapy. Because of the ease of administration, suitable investigations should be made to ensure that overdosage is avoided. Most of the patients treated received a dose calculated to be equivalent to their iron deficit, and this quantity produced and maintained, in nearly all cases, a satisfactory level of hæmoglobin. A smaller dose did not always maintain a satisfactory hæmoglobin level for the remainder of the pregnancy.

Summary

The dextran-iron complex 'Imferon,' which contains 50 mg. of iron per ml. and is suitable for intramuscular injection, has been tried in pregnant women with anæmia. Its effects were observed for six weeks or more in 68 cases, and for a shorter period in a further 13.

50 women received the dose of iron calculated as necessary to correct their iron deficiency, and all attained a satisfactory hæmoglobin concentration. 18 patients who received a standard dose of 500 mg. responded to a lesser extent.

The estimated average utilisation of the complex was 0·29 g. of hæmoglobin per 100 mg. of iron (51 mg. of iron raised the hæmoglobin level by 1%).

Local and general reactions were mainly mild and infrequent, and of 225 patients treated with the new preparation only 1 has had a severe reaction.

Treatment by intramuscular injection of this iron-dextran complex has advantages over treatment by intravenous injection of the saccharated iron oxide.

We wish to thank the consultant obstetricians of Saint Mary's Hospitals for Women and Children for their coöperation in this investigation. Messrs. Benger's Laboratories supplied the imferon.

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DERMAL REACTIONS TO INSULIN THERAPY*

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THE natural history of dermal reactions to insulin therapy has been thoroughly reviewed by Paley and Tunbridge (1952), who analysed the possible factors responsible for the local reactions and concluded that the dermal reactions to insulin were a local response to a product closely associated with insulin.

* Based on a paper read at the annual meeting of the British Association of Allergists on July 3, 1954, in Leicester, and previously summarised in their proceedings.

TABLE I—REACTIONS TO VARIOUS INSULINS

Solution no.	Mean area of reaction (sq. mm.)	
	Patients with local skin reactions (11 cases)	Patients never having received insulin (18 cases)
1	610	116*
2	667	76*
3	714	193*
4	819	251*
5	64	44
6	31	46

* $P < 0.01$.

Fabrykant and Ashe (1953a) did not find any significant difference in skin sensitivity to insulin between diabetics with local skin lesions and non-diabetic controls. Because this was contrary to our experience since 1947, the subject was reinvestigated.

The new insulin preparations also were studied because Murray and Wilson (1953) stated that eight of their patients on protamine-zinc insulin who were troubled with local insulin reactions recovered immediately on changing to the new insulin-zinc suspensions.

Preliminary efforts were made to obtain the impure "dermal reacting factor."

Method and Results

For the first experiment two groups of diabetics were selected. One group consisted of patients showing active local reactions to therapeutic injections of insulin. These patients had typical local reactions which were *not* due to faulty injection technique as suggested by Fabrykant and Ashe (1953b). Diabetics who were treated by diet alone and had never received insulin acted as controls.

'Alga' micrometer syringes, without the heavy adapter but with each syringe individually graduated to 0·02 ml.,† were used for the intracutaneous tests as previously described (Paley 1949).

Each patient from the two groups received a 0·02 ml. intradermal injection of the following test solutions:

No.	*Solution*	*Origin*	*Preservative*
1	Sol. insulin	British	Phenol 0·2%
2	Identical sol. insulin	,,	Cresol *B.P.* 0·3%
3	Sol. insulin	American	Phenol 0·2%
4	Dissimilar sol. insulin	,,	,,
5	Buffer sol. pH 3	British	Cresol *B.P.* 0·3%
6	,, ,, ,,	,,	Phenol 0·2%

Table I shows that all these insulins give well-marked reactions in the sensitive patients compared with the trivial reactions from the buffer solutions. The mean areas of reaction for the buffer solutions are remarkably constant for the two groups studied.

Intracutaneous test injections of various insulins into patients experiencing local reactions show significantly larger areas of reaction than were obtained in diabetics who had never received insulin. Therefore such sensitive patients are ideal for experimental testing.

New Insulin Preparations

The following insulins were tested in the dermal reacting group:

No.	*Solution*	*Origin*	*Preservative*
1	Experimental sol. insulin	British	Cresol *B.P.* 0·3%
2	Insulin-zinc suspension	Danish	Methyl hydroxybenzoate 0·1%
3	,,	British	Cresol *B.P.* 0·2%
4	,,	,,	Methyl hydroxybenzoate 0·1%
5	,,	,,	Cresol *B.P.* 0·2%
6	Buffer sol. pH 3	,,	Cresol *B.P.* 0·3%

Solution 1 was selected from six soluble insulins because it produced the biggest reactions when tested intradermally on an independent group of sensitive diabetics. Solutions 2 and 3 were selected at random without any knowledge of their therapeutic effect. Dr. Joan Walker, of Leicester, had observed many local

† Graduated by the Ballbrook Surgical Instrument Co. Ltd., Salford, Manchester.

TABLE II—REACTIONS IN SENSITIVE DIABETICS TO GROUP-2 TEST SOLUTIONS

Solution no.	Mean area of reaction (sq. mm.)	Solution no.	Mean area of reaction (sq. mm.)
1	766	4	746
2	627	5	756
3	249*	6	58*

*P< 0·01.

reactions with some batches of insulin-zinc suspensions. She very kindly supplied solutions 4 and 5 of these offending insulins. Solution 6 was a control buffer solution.

Table II shows that the Danish insulin gave a similar test reaction as an experimental soluble insulin known to produce dermal reactions, whereas the British insulin (solution 3) gave a significantly smaller test reaction. The two insulins producing cutaneous reactions when given in therapeutic doses are confirmed as producing a similar reaction to the experimental soluble insulin.

When commercial soluble insulin was recrystallised six times, a strikingly significant reduction in mean area of reaction was observed (Paley 1949). Hult and Jorpes (1949), using insulin recrystallised seven times, came to the same conclusion. Efforts have been made to obtain impure "dermal reacting factor." Insulin no. 1 used in the last experiment was subjected to various physico-chemical procedures, five different fractions being obtained. These fractions were dissolved under standard conditions and tested intradermally.

Table III shows the results of these tests. There has been no significant concentration of "dermal reacting factor" in any fraction. Fractions G and J show significant reduction in "dermal reacting factor" compared with the parent insulin solution no. 1. It is emphasised that these methods are not so efficient as six recrystallisations of the insulin.

Lipo-atrophy

The loss of subcutaneous fat at the sites of injection has been noted since the early days of insulin therapy. It has been shown that the association of dermal reactions and lipo-atrophy is very significant, and that impurities in the insulin can still be a factor in causing lipo-atrophy (Paley 1953). If that is so, possibly the impurity in insulin may be lipolytic.

The experimental insulin no. 1 and the five fractions E, F, G, H, and J were now tested for lipase activity.

By a method described by Archibald (1946) in which a water-soluble fatty-acid ester forms the substrate, remarkably consistent results of lipolytic activity have been obtained for a commercial preparation of lipase (0·04 ± 0·006 millimoles of fatty acid liberated in 1 hour by 0·5 ml. of 1% suspension of lipase). By this method no lipolytic activity has been found in insulin no. 1 or any of the five impure fractions.

Summary

The first experiment described here (table I) shows that two American soluble insulins (nos. 3 and 4) produced large areas of reaction when tested intradermally on sensitive patients. The mean area of these reactions, however, did not differ significantly from the test areas of a British soluble insulin (nos. 1 and 2).

TABLE III—REACTIONS FROM VARIOUS FRACTIONS OF INSULIN 1

Insulin fraction	Mean area of reaction (sq. mm.)	Insulin fraction	Mean area of reaction (sq. mm.)
1	766	G	532*
E	643	H	722
F	906	J	353*

*P< 0·01.

The results of this experiment contradict the statement of Fabrykant and Ashe (1953a) that there was no significant difference in skin sensitivity between diabetics with local skin lesions and non-diabetic controls. On the contrary, sensitive diabetics are ideal for experimental testing.

Although no significant batch-to-batch difference was observed with the soluble insulins in this experiment it has been referred to previously (Paley and Tunbridge 1952). Such a difference with the new insulins is shown in table II, where a British insulin (no. 3) gave a minimal reaction, and one Danish and two other British insulins gave reactions similar to those of an experimental solubie insulin known to produce dermal reactions when given in therapeutic doses. There is no doubt that cutaneous reactions will develop with the new insulins, and that variations of these reactions will be observed between one batch of insulin and another.

Efforts to concentrate the dermal reacting factor have so far failed, and the fractions prepared gave negative results when tested for lipase activity.

I wish to thank Prof. R. E. Tunbridge, O.B.E., for permission to study his patients; Messrs. Boots, of Nottingham, for a generous supply of experimental insulins and various fractions; and Miss Brenda Stannard for her assistance with the lipase estimations.

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NEUROLOGICAL AND MENTAL COMPLICATIONS OF RUBELLA

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IN most textbooks of medicine rubella is described as a mild disease of short duration with rare complications. However, in the last thirty years there have been several descriptions of fairly serious involvement of the central nervous system following or accompanying an otherwise normal rubella.

In Wilson's (1940) book only two fatal cases of rubella were recorded up to 1939, but a few more can be found in the papers of Carrieu et al. (1928, three fatal cases), Briggs (1935, one), Taylor (1937, one), Davison and Friedfeld (1938, three), Neal (1942, one), Margolis et al. (1943, four), and Falger (1944, one).

More than sixty cases with serious neurological complications have been reported to date, about ten of them being fatal. The published cases have been reviewed by Wilson (1940), Margolis et al. (1943), Falger (1944), and Rodriguez et al. (1947).

Non-fatal cases have been reported by De Gennes et al. (1934), Neal (1942), Margolis et al. (1943), Bradford (1943), Wingo (1945), Efrati (1946), Musaph (1947), Dagnelie (1948), Lockwood and Cole (1948), and Ford (1952).

Onset

The onset of central nervous complications is usually three or four days after the appearance of the rash. The patient then complains of headache, apathy, and a stiff neck, and less often of nausea and vomiting. Coma often follows in a few hours and may persist from a few hours to three days. If the patient does not die at this stage he can be expected to recover gradually in a few

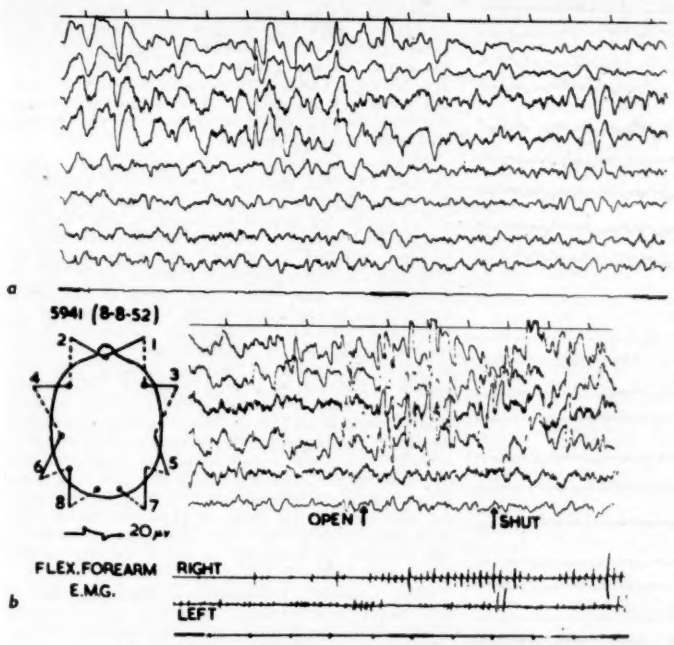

Fig. 1—E.E.G. (*a*) and electromyograms (*b*) on Aug. 8, 1952.

weeks. In some cases the central nervous complications have preceded the rash by two to nine days (Zadik 1927, De Gennes et al. 1934, Rodriguez et al. 1947), and in one case the rash recurred after the onset of neurological complications (Bradford 1943).

Pathology

In the cerebrospinal fluid (C.S.F.) a slight increase in protein and a large increase in the number of cells (mainly lymphocytes) are usually found. No specific post-mortem features have been found. Congestion of meningeal vessels and of the brain (with variable distribution in the white and/or grey matter), with or without petechial hæmorrhages, occasional necrosis of the walls of small blood vessels, and perivascular infiltration of round cells, have been described. There is usually no demyelination in these cases, in contrast with the extensive demyelination often found with other exanthemata, particularly measles. This finding may suggest that few, if any irreversible changes take place in neurological complications of rubella. It also may explain that, if the patient does not die in the first week, he recovers either completely or nearly so. This good prognosis seems to be valid no matter how serious the general or specific disabilities may appear in the first few weeks.

Case-report

A business man, aged 45, who had always been in excellent health, lived in a town where several cases of uncomplicated rubella occurred in June and July, 1952. His two children developed rubella with typical rash and cervical lymphadenopathy. One of them had mild pyrexia and malaise lasting a few days. On July 20, 1952, four days after the rash appeared in this child, the patient developed a rash and cervical lymphadenopathy. Two days later he retired to bed rather drowsy and irritable. On the fourth day his temperature was 101°F. He became semicomatose, with retention of urine, and was admitted to Guy's Hospital under the care of Dr. C. Hardwick. He remained comatose for two days there, and then periods of semicoma, of writhing excitement, and of difficulty in feeding followed. At first catheterisation was necessary, but eventually double incontinence developed. Gross excitement needing barbiturate sedation increased, and he took less and less food and fluid and was transferred to the acute ward of the Maudsley Hospital under the care of Dr. Denis Hill.

On admission on Aug. 7, 1952, the patient had periods of motor excitement and semicoma. He could not speak and did not appear to understand what he was told or what was going on around him. A coarse tremor at rest, involving to a variable extent the muscles of the limbs and face, was grossly increased by voluntary movements. This tremor (fig. 1*b*) was at 5 or 6 per second but was often complicated by repetitive jerks of large amplitude with irregular wild displacement of limbs on voluntary movements. These jerks apparently developed when the patient was still at Guy's Hospital, as soon as he came out of coma. The jerks and the tremor involved less frequently the facial muscles than those of the limbs. The movements of the eyeballs were severely and equally affected; even during brisk jerky rotation or elevation of the eyes their axes moved together in parallel. The pupils were very small and irregular, with very slow reaction of the

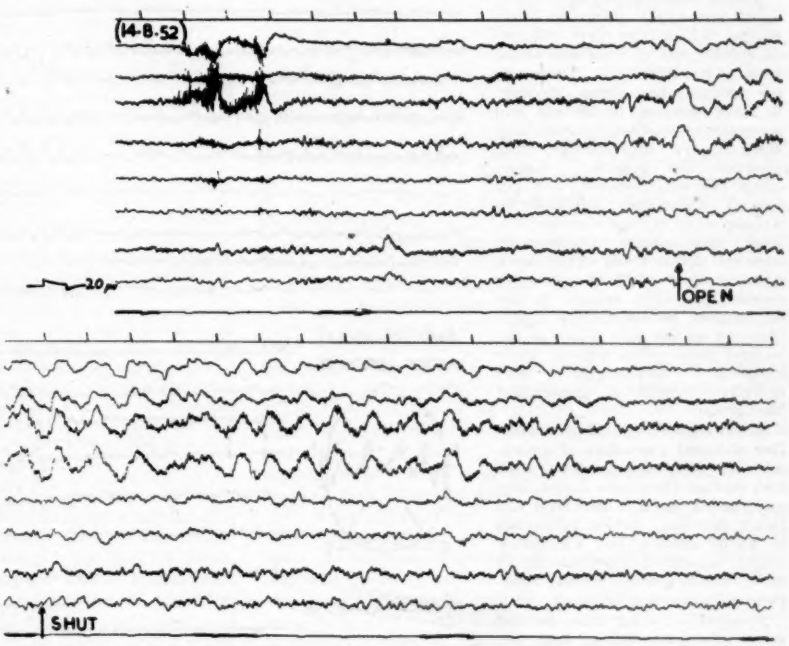

Fig. 2—E.E.G. on Aug. 14, 1952. Patient awake (position of electrodes as in fig. 1). Distinct change in E.E.G. coinciding with eye opening, but persisting after eye closure.

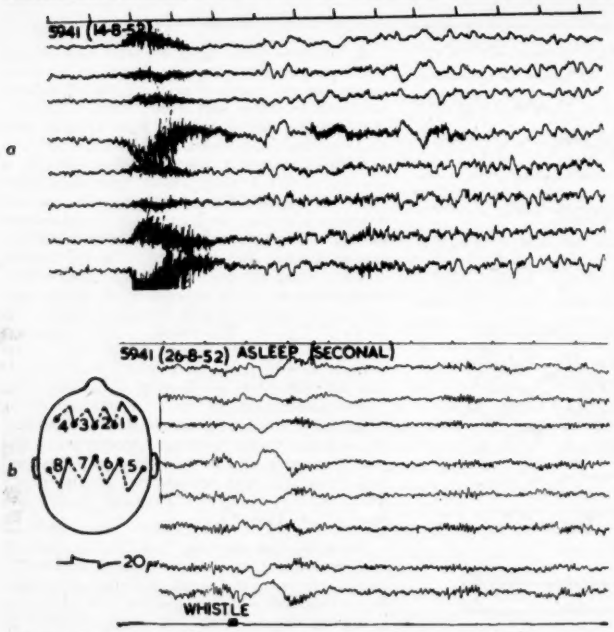

Fig. 3—*a*, E.E.G. on Aug. 14, 1952. Patient awake. After a spontaneous movement there is a distinct change in the E.E.G. *b*, on Aug. 26, 1952. Patient asleep. The K complex evoked by a noise shows some amplitude asymmetry.

irides to light. The neck was stiff. No definite weakness of limbs or face was observed. The tendon-jerks were variably increased together, and the plantar responses were variable but often extensor. Sensory stimuli, even light touch, particularly of the lower limbs, abdomen, and urethra (when occasionally catheterised), often evoked mass reflex wild excitement and loud groaning. The patient was completely out of touch and usually doubly incontinent, but on a few occasions catheterisation was necessary.

Electro-encephalography.—This state lasted for about a week, during which the first electro-encephalogram (E.E.G.) was taken on Aug. 8, 1952 (fig. 1). There was no recognisable alpha rhythm. A large amount of muscle and movement artefact (particularly due to eye movements) complicated the picture. Large, often rhythmic, waves, 2–4 per second, sometimes followed by a sharp wave in form of a complex, were seen nearly continuously over the anterior half of the head. Some activity of 20–24 cycles per second (probably related to the barbiturate sedation) was superimposed on the slow waves in the central parasagittal regions, while irregular intermediate slow activity formed a generalised background.

Electromyography.—The same day a record was taken of muscle activity over the forearm with two surface electrodes longitudinally placed on each limb over the flexor muscles. Action potentials in small groups, but sometimes single, appeared rhythmically 5 or 6 times a second, usually independently on each forearm.

Progress.—During the second week after admission, but the third week of the illness, the patient appeared slightly more conscious of his environment. A severe staccato dysarthria, with high-pitched intonation and gross perseveration, often masked an ability to produce his name, to say yes or no, and occasionally to give his right hand. Otherwise he was out of touch, but coma did not recur. The tremor, particularly the wild jerking movements both of the eyeballs and of the limbs, decreased.

Electro-encephalography.—A second E.E.G., taken on Aug. 14, 1952, showed a great deal of variability. No alpha rhythm was seen. Rhythmic activity at 2–4–6 cycles per second appeared in long runs lasting 15–30 seconds, usually bilaterally, synchronous and not affected by either opening or closing the eyes (fig. 2, same electrode position as in fig. 1). This activity was often better seen in the transverse than in the longitudinal combination of the electrodes (fig. 3*a*). Sometimes flattening of the record, or bilaterally synchronous runs of waves at 13 or 14 cycles per second, looking like sleep spindles, followed the long runs of slow waves. There was very little fast activity in the anterior frontal regions and much more in the paracentral (fig. 3*a*). The beginning of the long runs of rhythmic activity was often accompanied, or just preceded, by some spontaneous change in the patient's state, either a series of movements or a sigh, or just opening and closing the eyes, or rhythmic movements of a foot (usually the left). No change, however, was evoked by a sudden noise or by the patient opening and closing his eyes to order.

Other Special Investigations.—Examination of the blood was normal, including serum-protein levels. Urine and blood-urea were normal. Tests for lues, mumps, lymphocytic choriomeningitis, undulant and glandular fevers, and leptospiral, typhoid, and paratyphoid infections were negative. The C.S.F. contained protein 50 mg. per 100 ml. and 42 cells per c.mm. (80% polymorphs), but by the fourth and ninth weeks there were 9 and 2 lymphocytes respectively and the protein was less than 30 mg. per 100 ml.

Progress.—During the third week the patient was withdrawn from sedation, given general nursing care in quietness on floor mattresses, and rarely given carbachol. Catheterisation was no longer necessary. Any sort of stimulation, however, produced exhausting periods of excitement, and later

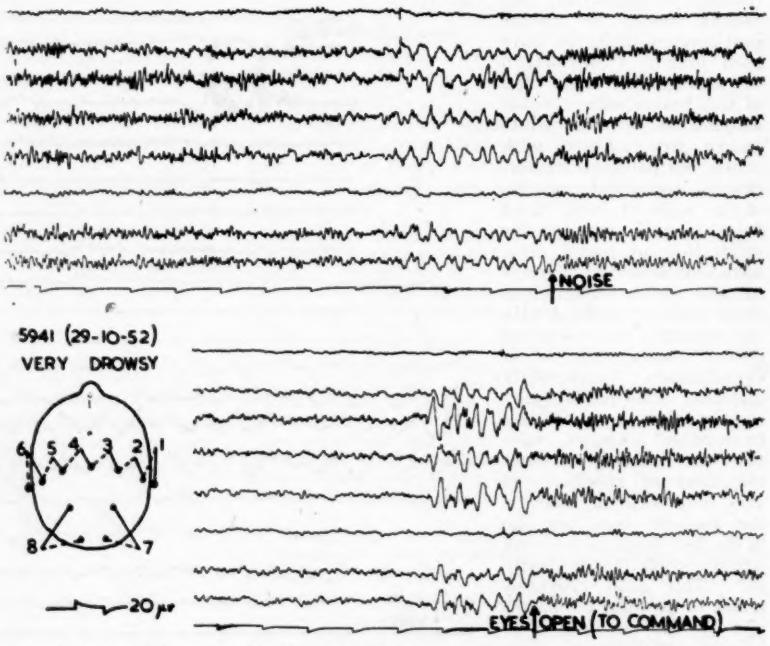

Fig. 4—E.E.G. on Oct. 29, 1952. Sudden and distinct fluctuations in the record (patient without drugs for one month).

small doses of intramuscular phenobarbitone (gr. 3) were occasionally required. The tremor and irregular jerks were much reduced. The confusion decreased, but often the excitement was greater.

Electro-encephalography.—Another E.E.G., taken on Aug. 18, 1952, was similar to the previous one, showing much fluctuation in type of activity. The patient was not coöperative, and fairly regularly, every 5 or 6 minutes, suddenly seemed to panic, shouted, made wild movements of the limbs, and pulled off most of the electrodes. Sudden noises on this occasion evoked long runs of 2–4 waves per second, particularly in the frontal region (not always related to eye-movement artefact). On Aug. 26, 1952, no waking record could be obtained, through lack of coöperation. Quinalbarbitone sodium gr. 3 was administered, and the record could begin only when the patient was asleep. Generalised and often bilaterally synchronous waves 14 per second in the form of spindles and some slow activity were seen from all the explored areas. The amplitude of these activities was fairly symmetrical over the two hemispheres, but on occasions it appeared smaller over the right sylvian region than over the left. Auditory stimuli evoked symmetrical K complexes (fig. 3*b*).

Progress.—Fear, perplexity, gross perseveration, and occasional auditory and visual hallucinations appeared to increase until the sixth week. The control of bladder and rectum returned. In this period tachycardia, hypertension, basal râles, ankle œdema, and pallor developed. The patient was given digoxin in the next two weeks, which coincided with the disappearance of all the latter signs. An electrocardiogram taken on Oct. 10, 1952, was normal. The neurological and mental picture improved further from the ninth to the eleventh week, and the reactions of the pupils became normal.

Electro-encephalography.—On Oct. 6, 1952, another E.C.G. was taken when the patient appeared greatly improved and coöperative and had been off all medication for a week. The alpha rhythm was at 8 or 9 cycles per second and fairly well blocked by opening the eyes. Some activity of 18–22 cycles per second was still present in the central but not in the frontal areas. A moderate amount of intermediate slow activity was seen over both hemispheres and appeared slightly increased after hyperventilation. The responses to photic stimulation were small, regular, and symmetrical. In the following fortnight improvement accelerated. A slight euphoria became evident and, though decreased, was still present on discharge from this hospital three months after the appearance of the rash. Another E.E.G. was taken on Oct. 29, 1952, before discharge. The patient was often spontaneously dozing during the test and frequent "sleep drifts" were recorded. Though the record was similar to the one of Oct. 6, the fluctuations in activity were large and sudden, runs of slow waves occurring generalised, without preliminary flattening in the E.E.G. as is usually seen during periods of "sleep drifts" in healthy people. All the changes were symmetrical (fig. 4). The responses to overbreathing and photic stimulation were within normal limits.

Follow-up.—After discharge from hospital this patient regularly attended as an outpatient and was followed for twelve months. His very slight tremor and euphoria disappeared within six months, and his ankle œdema in nine months. Psychological tests just before discharge and subsequently showed a Wechsler full-scale intelligence quotient of more than 140 without significant subtest scatter. The patient, though apparently capable of full work, was encouraged to convalesce until the eighth month, lest his tolerance be strained and produce severe anxiety. In the last eighteen months he has returned to full work and is without any disability whatsoever. If anything, his outlook on life is slightly more relaxed than before his illness, but his judgment is as acute. This has been considered as due not to possible brain damage but probably to a more accurate perspective of the meaning of being alive.

Comments

The clinical and electro-encephalographic study of this patient shows that rubella severely affected his brain-stem and spinal cord, and probably his frontal lobes, causing gross mental disturbance which lasted two months in a severe form and gradually cleared up in six months. Except in toxic or metabolic psychoses it is uncommon for complete recovery to follow such a widespread lesion of the central nervous system. Such recovery supports the view that the anatomical changes supposed to be related to the neurological complications of rubella are largely reversible in weeks or months.

The present case is of interest for the unusual severity of the mental disturbances not previously described as a complication of rubella, and the electro-encephalographic studies, which appear to be the first reported in rubella.

The patient was under the care of Dr. Denis Hill, whom we thank for permission to publish.

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OCCASIONAL BRONCHOGRAPHY

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IN medicine even the most complicated procedures become simple in the hands of experienced practitioners. But, conversely, even relatively simple procedures remain difficult if experience is wanting. Bronchography is a case in point. In large centres where many bronchograms are done team-work will ensure acceptable results whatever the method. Where, however, examinations are few the happy outcome of a good bronchogram is rare. This is an old problem but in recent months it has come more to the fore. 'Dionosil' has been introduced; and, with a contrast medium now available which leaves no troublesome rests in the pulmonary alveoli, the safe and reasonable indications for bronchography are wide. In the days of iodised oil the X-ray department in a small general hospital might have been asked to do three or four bronchograms in a year. Now the same department may be tackling one or two in a week, and it is obviously a matter for concern if diagnostic films are not consistently secured.

Already a good many reports have been published of the behaviour of the new medium (Don 1952, Holden and Crone 1953, Cummins and Silver 1953, McSwan and Allan 1953, Elphinstone et al. 1954, and others) and various techniques have been described. Most workers tend to favour cricothyroid puncture. The reason given by Don (1952) for this preference is that the method eliminates some of the problems of the anæsthetic agent. Whatever anæsthetic solution is used, the upper safe limit of dosage must be observed, and it is argued that, if too much is used in the pharynx and larynx, not enough is left over to abolish the cough reflex in the trachea and bronchial tree.

It is difficult, on the other hand, to reconcile this view with the experience of Mackay-Dick (1954), who has used dionosil successfully by cricothyroid puncture without spending any of his anæsthetic in the bronchial tree, and of Cummins and Silver (1953), who have been successful with tracheal intubation using a laryngoscope. It seems probable on balance that the speed and certainty of the cricothyroid method is its real attraction, and in

special centres where large numbers of cases are waiting to be done it may be justified. If, however, it were true that the anæsthetic always demanded its use, it would be a point strongly to the disadvantage of dionosil. With iodised oil cricothyroid puncture was never required on these grounds, and Brock (1931) has stated that in 70% of adult patients successful lipiodol bronchograms can be secured without anæsthesia by simple peroral supraglottic instillation.

Whatever the validity of these arguments it is clear that, even if cricothyroid puncture is the most suitable method in large clinics and chest hospitals, it cannot and should not be used universally. For occasional bronchography in small clinics some other method must be devised, and one such is now described. It has proved successful with a fair variety of patients.

The Patient

An inpatient is readily available, and numerous trips to the X-ray department are easy to arrange and may even help to pass the time away. An outpatient presents a different problem, and here every effort should be made to let one visit to hospital suffice. First, one must be prepared to do without any effective premedication, since the patient will often drive up in his own car and will certainly expect to drive home in it. Secondly, an anæsthetic must be chosen which will not call for sensitivity tests since it is usually impracticable to do these and the bronchogram on the same day. Thirdly, allowance must be made for the fact that the patient will often arrive in a flurry and in complete ignorance of what is about to happen. If this state of mind is not corrected, a good result is most unlikely to follow.

The Anæsthetic

Many alternative choices of anæsthetic are available, but most are open to criticism on one ground or another. Cocaine is now almost universally disapproved because of its dangerous toxicity; and amethocaine, although safer, is still not perfectly safe and calls equally for sensitivity tests. In contrast w-diethylamino-2.6-dimethylacetanilide (lignocaine, 'Xylocaine,' 'Xylotox') is free from major disadvantages. In a 4% isotonic solution it is a good surface anæsthetic, and in the dosages commonly used severe or serious reactions have yet to be reported. Messrs. Duncan, Flockhart & Co. Ltd., the manufacturers of xylocaine, state in a personal communication that they do not recommend sensitivity tests since they have not come across any cases of undue sensitivity to it. There are no references in published reports to any extensive trial of xylocaine in bronchography, and it is thus not easy to arrive at a safe upper dose. But both Messrs. Duncan, Flockhart & Co. and the Pharmaceutical Manufacturing Company suggest 0·5 g. or, in terms of a 4% solution, 12 ml. In practice considerably less than this amount is effective; and therefore the operator can proceed with a high degree of confidence, at least so far as the anæsthetic is concerned.

Method

The method will now be described in detail not because it contains anything new or controversial but simply as a guide to the inexperienced. Most accounts of bronchography assume some previous knowledge, and the beginner is left to make his own mistakes. A routine, described step by step and including the obvious as well as the obscure, may be of help to the house-physician or whoever is making an attempt at this examination for the first time.

The patient is asked to attend an hour before the time set aside for the bronchogram. He is seen on arrival by a nurse, who gives him by injection atropine gr. $^1/_{100}$ and at the same time begins the necessary process of reassurance and encouragement. Next, preliminary anteroposterior and lateral radiograms are taken on the X-ray couch at 48-inch focus-film distance to determine the most suitable technical factors for the case. With these various procedures the time of waiting passes easily, and an hour after the injection the examination proper begins. The operator charges a throat spray with 8 ml. of 4% xylocaine. He confronts the patient, who should be comfortably seated, and makes one or two preliminary sprayings on the soft palate and fauces. Working with a small measured quantity of local anæsthetic such as 8 ml. it is helpful to have a fine rather than a coarse spray, because it is thus much easier to conserve the supply and to ensure that it is distributed to the best advantage. Spraying is continued with frequent short rests during which the patient's confidence can usually be won. Special care should be taken to emphasise that the examination is not painful, but that it can only be done successfully with the patient's full coöperation. Even very nervous patients will respond to this challenge. Every step that it is intended to take should be explained in simple terms, and gradually spraying is continued until 4 ml. of the anæsthetic solution has been expended. If the nozzle of the spray has been well directed, adequate anæsthesia of the pharynx and of the upper larynx will have been secured, and at this point, more or less as a gesture, one or two sprayings should be made into the clearer of the two nostrils.

The anæsthesia can now be tested by passing a moistened finger over the back of the tongue. If there is no retching or gagging when the epiglottis and fauces are fingered in this way, one can safely proceed. The 4 ml. of anæsthetic solution remaining is drawn into a syringe to which is attached a long curved cannula. A salpingography cannula is suitable. The patient is reassured that this instrument is not about to be plunged down his throat but merely laid along his tongue. He is, however, warned that the next item will cause coughing, such as might be occasioned by anything "going the wrong way." The cannula is then placed on the tongue, which should be steadied in a swab held by an assistant. The point of the cannula is directed towards the opening of the larynx, and the patient is told to breathe in, then out, and to stop breathing in expiration. At this stage 2 ml. is injected, and the patient is told to inspire. If the manœuvre is successful, the anæsthetic will enter the trachea, and a sharp bout of coughing will ensue. A pause of a few minutes is allowed, and the procedure is repeated with the remaining 2 ml. of anæsthetic.

All is now prepared for the only exacting step which this method calls for. The patient is asked to enunciate "ninety-nine" or any suitable sound, and the tone is mentally noted. He is then asked to sit very erect on the side of the X-ray table and to extend his head on his atlas while keeping his cervical spine as straight as possible. The position to be aimed at is that of a lady sniffing at a bottle of smelling-salts. The operator, using a gauze swab, now grasps the patient's extended tongue in his left forefinger and thumb and takes in his right hand a soft rubber catheter (no. 9 English gauge) whose end has been slightly lubricated with sterile liquid paraffin. The patient is reminded to maintain the sniffing pose, and the catheter is gently pushed along the floor of the nasal cavity and down into the oral pharynx. The patient is now told to breathe fairly deeply through the mouth, and at each inspiration the catheter is advanced tentatively. It will quickly pass into the larynx and down into the trachea. Often moist sounds obviously conducted through the tube make it obvious that it is correctly placed, but, if there is any doubt, the patient is again asked to say "ninety-nine." If the catheter is in the trachea, he will not be able to do so. The catheter is now lightly secured to the patient's cheek with adhesive strapping, and he is told not to try to speak and, if possible, not to cough, whatever happens. It is helpful to most patients to add that, if they absolutely must

cough they must, and to promise that the examination will not be spoilt but only made somewhat less good.

The operator must take care from this point onwards to phrase his remarks in such a way that not even the most loquacious patient will be tempted to answer back.

An assistant posted behind the patient now supports him reclined 45° backwards and 45° towards the side to be filled. A syringe containing 20 ml. of dionosil (aqueous or oily) is applied to the open end of the catheter, and 8 ml. is slowly injected. As the injection is begun, the patient is again asked to resist any impulse to cough. He is directed to breathe gently and to disregard, so far as possible, any bubbling or other odd sensations in his throat. When 8 ml. has been introduced, the position is maintained for about two minutes, and then the patient is brought forward to the vertical position but still inclined 45° to the elected side. 4 ml. is then quickly injected, and the patient is immediately bent as far forwards as possible and still a little to the side. This manœuvre is designed to fill the middle lobe (or lingula, as the case may be), and the position of forward bend is maintained for ninety seconds. During this interval the patient is told that the next move will be to place him on his side on the table. When this is done, a further 4 ml. is run in, and again with some dispatch the patient is hauled over the end of the table and held with the shoulder on the filled side dependent. He should be rocked slightly round his own long axis and after a further ninety seconds edged back on to the table and positioned on an X-ray film for the lateral view. This is taken as quickly as possible, and immediately thereafter the supine (anteroposterior) view is done.

If only one side is being attempted, the patient may now relax, and the catheter is withdrawn He is asked to refrain, if possible, from coughing until the first films can be seen. If both sides are to be filled, the above-described procedure is repeated for the second lung, and two further films are taken : first, a supine film (anteroposterior) and, to conclude, an oblique film to give an alternative view of the second lung.

Comments

It may seem that a method involving blind intubation of the trachea might prove unduly complicated for occasional bronchography. The fact is, however, that with very little practice it is easy to pass the tracheal tube. If, because of a bulbar palsy, it becomes necessary to feed a patient through a stomach-tube, it is commonly found that such a tube will mostly enter the trachea unless carefully directed into the œsophagus under vision. Similarly, if the pharynx is properly anæsthetised, any tube introduced through the nose will tend to find the laryngeal opening, unless there is very extensive adenoidal overgrowth or other obstruction to prevent a clear run in.

It is generally accepted nowadays that it is necessary in bronchography to have some reasonably positive method of filling the lung under suspicion or both lungs, as the case may be. This end is achieved by cricoid puncture, but equally it is achieved by tracheal intubation, and in the latter case the patient is easier to position and the operator need be in no fear of injuring the trachea or peritracheal tissues. From the patient's point of view also there can be no doubt that to have a soft fine tube gently introduced into a nostril is much less alarming than to undergo minor surgery on a part of the neck which in the lay mind is closely associated with throat cutting. Few doctors, if called on to submit to bronchography, would ask for cricoid puncture, and most would settle for blind intubation in preference to laryngoscopy. It is salutary sometimes to put ourselves in the patient's position and to do as we would be done by.

My thanks are due to Dr. H. A. Condon for helpful advice about the anæsthetic procedure.

References at foot of next column

FROSTBITE IN GOLDEN HAMSTERS REVIVED FROM BODY-TEMPERATURES BELOW 0°C

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FROSTBITE and other lesions due to cold were intensively studied both in laboratory animals and in man during and between the first and second world wars and the Korean war. There is abundant evidence that vascular stasis and œdema occur after the affected parts are rewarmed (Kreyberg and Rotnes 1931, Friedman 1945, Fuhrman and Crismon 1947, Kreyberg 1950, Edwards and Leper 1952, Vavala 1953), and little doubt that production of histamine-like substances contributes to the altered permeability of the capillary bed (Lewis 1941). Blockage of blood-vessels followed by thrombotic ischæmia is a contributory cause or may even be the main cause of necrosis and gangrene following frostbite (Davis et al. 1943, Friedman and Kritzler 1947, Schumacker 1947). Cold may also have a direct injurious effect on tissues. Thus it is likely that damage to muscle and nerve occurs (Lewis 1951) and may predominate, particularly in prolonged exposure to the combination of moisture and chilling which cause trench-foot and immersion-foot (Ungley and Blackwood 1942, Blackwood 1944). Nevertheless, recent reviews (Kreyberg 1949, Edholm 1952, Montgomery 1954) and discussions at conferences (Josiah Macy, jun., Foundation 1951, 1952) indicate that methods of treatment as well as fundamental and contributory causes of these complaints are still the subject of controversy. In particular, the rôle of ice crystals in causing tissue damage is much debated. Sir Thomas Lewis (1941) assumed that mechanical injury to cells was inevitable when ice crystals formed in the skin. Greene (1942) doubted the validity of this assumption, and Kreyberg and Hanssen (1950) made the significant observation that whole mouse skin frozen at −78° or −190°C underwent necrosis when left in situ in the living animal, but that the epithelium survived and would proliferate if, shortly after thawing, it was autografted to another site. Burton (1951), on the other hand, asserted that if there had been ice formation, except of the peculiar kind resulting from quick freezing, then there was bound to be tissue damage. It has been thought that solidification of lipids might impart to tissue a feeling of hardness indistinguishable from freezing (Burton 1951, Talbott 1951), and elegant methods have therefore been devised for detecting the presence of ice (Meryman and Moore 1953). Meryman (1953) declared that " ice crystals themselves are the principal and possibly the sole villains of freezing trauma." Microscopic studies during freezing and thawing of cells (Smith, Polge, and Smiles 1951) and tissues (Smith and Smiles 1953) have demonstrated, however, that ice crystals are not necessarily destructive. Lovelock (1953a and b, 1954a and b) has proved, moreover, that the major source of damage to living cells during freezing and thawing is the deleterious effect of strong salt solutions during formation and dissolution of ice ; changes in the proportions of lipids and phospholipids in the cell membrane are also of great importance both during exposure to sudden temperature change and during prolonged cold storage.

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Recently we reported that hamsters had been revived from body-temperatures below zero after either supercooling or partial crystallisation (Smith, Lovelock, and Parkes 1954). We noted that among twenty-one animals which survived peripheral freezing damage attributable to frostbite had occurred in only two. The possibility that the propylene glycol used in the cooling bath had affected the reactions of the superficial tissues was noted. A commentator in *The Lancet* (1954) subsequently remarked: "It should not be forgotten that mammalian skin is remarkably resistant to freezing and thawing." It has since been shown that frostbite and allied cold injuries can readily be induced in hamsters by altering the procedure. The purpose of this communication is to describe some of these experiments. The incidence of other lesions occasionally observed, including gastric and intestinal hæmorrhages, gastric ulcers, and lens opacities will be described elsewhere (A. U. Smith and J. E. Lovelock).

Material and Methods

Hamsters weighing 80–120 g. were cooled by the method previously described (Andjus and Smith 1954a and b, Smith, Lovelock, and Parkes 1954). Unless otherwise stated they were transferred to the sub-zero bath when circulation and respiration had ceased, and with colonic temperatures between 2° and 3°C—usually at 2·8°C. The bath consisted either of 50% propylene glycol kept at temperatures between −3° and −10°C, or saturated NaCl at −5°C. In other experiments the hamsters were removed from icy water and left in cold air (−3° to −20°C) in a Prestcold deep-freeze cabinet. In every instance the forelimbs were secured behind the back to protect them from injury during rewarming. This procedure probably protected them also from the full effects of the cold environment to which the hindlimbs were exposed. Unless otherwise stated they were left until the body-temperature had been below 0°C for 40 min. and until they had been freezing for 35–40 min. Subcutaneous and colonic temperatures were recorded from thermocouples. The apparatus and technique of reanimation will be described in detail elsewhere (Smith and Lovelock). Briefly, the animals were rewarmed by heating the whole body with diathermy until the colonic temperature reached +10°C. Heat was then discontinued and artificial respiration was administered until spontaneous respiration was resumed. When the body-temperature reached +20°C the animals were washed in cold water, dried, and left at room-temperature. They recovered rapidly and within one hour had resumed normal posture. In 3–18 hr. they had regained an appetite and displayed usual behaviour which was modified only slightly even when ears or paws were frostbitten.

The pinnæ, toes, and skin from the dorsum of the paw were fixed in Bouin's solution and stained with hæmatoxylin and eosin.

Results

Temperature Records

Typical records of colonic and subcutaneous temperatures in two hamsters are shown in fig. 1. One of these animals started to freeze, as judged by hardening of the ears and skin, and fixation in situ of the thermocouples at approximately the time when the colonic temperature was 0°C with a subcutaneous temperature of −4·5°C. A typical freezing plateau at −0·6°C was thereafter recorded from the colon while the subcutaneous temperature stabilised at about −4·5°C.

The other hamster supercooled until the colonic temperature reached −4·6°C, and the subcutaneous temperature reached −6·6°C. The ears, paws, and body-wall of the trunk remained soft and pliable and the thermocouples could easily be moved. The colonic temperature then rose abruptly to −1·0°C and levelled off at −0·6°C, while the subcutaneous temperature rose to −4·1°C. Thereafter progressive stiffening of the skin took place, and within 2 min. both thermocouples were firmly frozen in position.

The majority of hamsters which supercooled were rewarmed before there was an indication of freezing anywhere in the body.

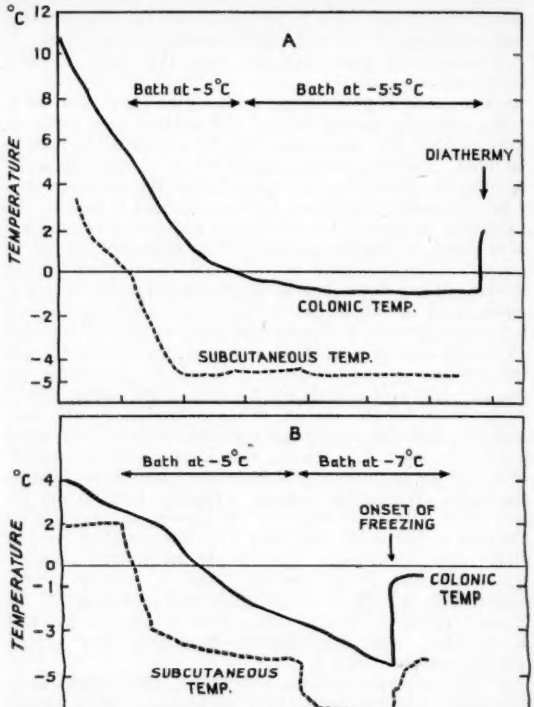


Fig. 1—A, cooling curves recorded from hamster which froze for 40 min. while immersed in bath at −5·5°C. B, cooling curves recorded from hamster which supercooled for 30 min. and then crystallised spontaneously and froze for 5 min. while immersed in bath at −7·0°C.

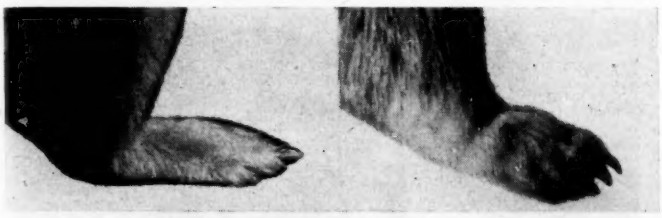
Preliminary Experiments

Sixty hamsters were cooled in propylene-glycol baths at −5°C. Twenty-five of these animals supercooled to temperatures ranging from −2·5° to −6·0°C and showed no evidence of freezing. Thirty-five froze for periods varying from 15 to 60 min. They were all examined daily for many weeks after revival. In two of these animals the pinnæ underwent dry gangrene and subsequently separated and dropped off. Lesions of the extremities or of the skin of the trunk were not noticed in any of the other animals.

Effect of Bending Frozen Extremities

In the first test fifteen hamsters were frozen as before, and ten were supercooled. Using warm fingers, in each instance one pinna of ten of the fifteen frozen animals and of all the supercooled animals was bent near its base three times during the period of freezing or supercooling. The results showed that in all the frozen animals the pinna which had been bent underwent dry gangrene and dropped off, whereas in the supercooled animals no lesions were observed. In five frozen animals, however, the margin of the unbent ear also hardened and a small portion, less than a quarter of the whole, eventually separated. This was probably because when one pinna was bent with the body still immersed in the bath the other pinna tended to knock against the head-rest or the wall of the bath.

It seemed possible that the lesions resulted from repeated freezing and thawing rather than from bending. A second test was therefore carried out in which ten hamsters were frozen in the usual way and one pinna was bent three times half-way along its length, with cold forceps kept at −5°C. One hind-paw was also grasped



A B

Fig. 2—A, normal hind-paw of hamster (×2). B, hind-paw of hamster 48 hr. after bending in frozen state (×2).

in cold forceps and forcibly bent three times at the metatarsophalangeal joint. A frozen pinna and paw of two other animals was bent once only after 20 min. below 0°C. In each animal the distal half of the bent pinna subsequently underwent dry gangrene comparable to a fourth-degree frostbite, whereas the bent paw and toes swelled and became cyanosed and closely resembled the appearance of third-degree frostbite (Orr and Fainer 1952).

Macroscopic Changes after Thawing the Bent Extremities

Immediately after thawing was complete no abnormality could be detected in the bent paw or toes. As soon as a peripheral circulation was established, however, the bent paw and toes showed an exaggerated reactive hyperæmia as compared with controls. Within 30 min. of the start of rewarming they began to swell, and within an hour the distal half of the paw and the toes were intensely swollen and cyanosed. The swelling increased over the next few hours and had usually reached a maximum within 24 hr. There was little diminution in swelling for at least 3 days. The appearance of the paw 48 hr. after bending in the frozen state is shown in fig. 2; a normal hamster hind-paw is shown for comparison. By the 5th or 6th day the swelling had decreased and, in some animals, it had disappeared by the 7th day; in others, it persisted to a minor degree until the 11th or 12th day. In addition, minute blisters were sometimes seen and occasionally there were cracks in the epidermis from which a clear fluid oozed. In some animals small bloodstained crusts formed over localised areas, particularly at the tips of the toes. In every instance the nails appeared darkly stained at their base on the day after freezing or bending. Subsequently the nails belonging to the affected toes were partly or completely lost. On the 5th–11th days, when the swelling had diminished, the skin over the metatarsophalangeal joints and the base of the digits appeared shiny and usually thinner than normal although in a few instances it was thickened and there was also a thickening of the pads on the under-surface of the toes and paw. 2–3 weeks after the experiment the paws appeared superficially normal; but, on close inspection, slight deformities of the tips of the toes and absence or distortion of nails could sometimes be detected. Throughout the whole period the animals appeared to suffer little or no inconvenience and fed, walked, and climbed using the injured paw actively.

The ears of all animals revived from sub-zero temperatures stood out more prominently than usual for the first 8–24 hr. after reanimation. The ears which had been bent in the frozen state showed no additional change for the first 48 hr. Then, usually on the 3rd day, the margin of the pinna began to harden and by the 7th day the whole of the distal half of the pinna beyond the line of bending had hardened, shrivelled, and apparently become mummified. Between the 11th and the 17th days the affected part separated, leaving a clean edge free from hairs and pigment, but covered with epithelium.

Microscopic Changes after Thawing Bent Extremities

Within an hour of reanimation the skin and subcutaneous tissue over the dorsum of the distal half of the paw was thickened with œdema fluid. Much fibrin was present, particularly in the region immediately underlying the stratum germinativum. The small arterioles, capillaries, and venules were dilated.

24 hours later the œdema and fibrin had increased in amount. In places the stratified epithelium was actually split by an accumulation of structureless, faintly eosinophile material and was infiltrated with polymorph leucocytes. In some regions the cells of the malpighian layer were undergoing degeneration and had pyknotic nuclei and the overlying horny layer had disintegrated. The small vessels were still dilated and diapedesis was seen. There was a massive infiltration of the dermis with polymorph leucocytes, and there were small areas of hæmorrhage.

After 3 days the skin near the metatarsophalangeal joints showed complete necrosis of the epidermis, the dermis and its appendages, and the subcutaneous tissues. Proximal to this region the tissue was œdematous although less so than previously. Vasodilation was less noticeable, and many new capillaries had appeared in the dermis which was heavily infiltrated with mononuclear cells and a few polymorph leucocytes. The hair follicles and sebaceous glands appeared normal. Sections through the toes at this time showed degeneration of the stratified epithelium on both the dorsal and ventral surfaces, and hæmorrhage into the dermis and in the nail-bed which showed evidence of grave disorganisation. Hair follicles on the dorsal aspect and sweat-glands in the pad were degenerate (fig. 3). A week after the experiment, microscopic studies of the skin from the paw and the toes showed that much recovery had taken place. The epithelial cells comprising the nail-bed had, however, degenerated completely and the nail had lost its normal structure and staining reactions. The proximal phalangeal bone was necrotic and was surrounded by large numbers of mononuclear cells, plasma-cells, and fibroblasts. The pinna which had been bent in the frozen state also showed interesting and characteristic changes. Within an hour of thawing, sections through its length showed that the proximal half was œdematous and that the dermis was separated from the central cartilaginous strip. The blood-vessels in the central and distal regions were engorged and densely packed with red blood-cells. 24 hours later œdema of the proximal half had increased and the dermis and subcutaneous tissue in this region was infiltrated with polymorph leucocytes. In the distal half the dilated blood-vessels were filled with structureless eosinophile material. The stratified epithelium was degenerate with pyknotic nuclei, and near the tip there were no remains of visible

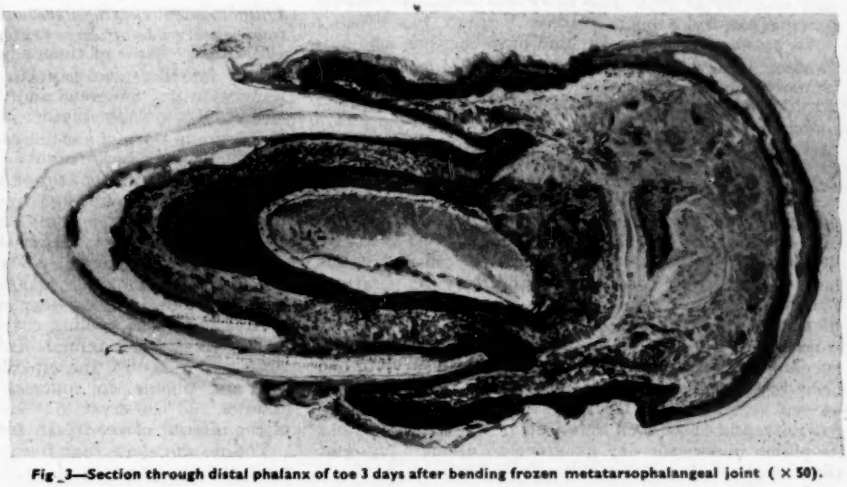


Fig. 3—Section through distal phalanx of toe 3 days after bending frozen metatarsophalangeal joint (×50).

structure. In this region, which was deeply pigmented, the hair follicles were also completely degenerate, the cartilage cells were poorly stained, and the whole structure appeared to be shrivelling. On the 3rd day the proximal half of the pinna was still œdematous and was heavily infiltrated with mononuclear cells. In the distal half, which was shrivelled and deeply pigmented, little structure other than degenerate cartilage could be made out. On the 7th day after freezing the whole distal half of the pinna had undergone mummification. A line of separation was evident at the margins of which the stratified epithelium had proliferated. The proximal half of the pinna was thicker than normal and was hyperæmic but otherwise normal (fig. 4).

Fig 4—Longitudinal section through central part of pinna 7 days after bending in frozen state, showing line of separation between mummified distal portion and swollen proximal portion (×75).

Effect on Frozen Extremity of Contact with Solid CO_2 at −79°C

Two animals were frozen in the usual way. When the colonic temperature had been below 0°C for 30 min. and had stabilised at −0·6°C for about 25 min. the ears and paws were extremely rigid and apparently severely frozen. A piece of solid CO_2 was then applied firmly to the dorsal surface of the right hind-paw for $2^1/_2$ min. in one animal and 5 min. in the other. The paws were left for 5 min. thereafter at −5°C before rewarming the animals. The right hind-paws of both animals showed excessive hyperæmia, and within an hour were intensely swollen and cyanosed. During the next 2 days they both showed the appearances of severe fourth-degree gangrene with hæmorrhagic bullæ on the dorsum of the foot. The paws then began to shrivel and undergo dry gangrene. On the 3rd day the animal which had been treated with solid CO_2 for 5 min. amputated the distal half of its right hind-paw, and the following day there was a clean line of separation at the lower end of the leg. In the other animal, whose paw had been in contact for $2^1/_2$ min., dry gangrene set in on the 4th day. It amputated its toes on the 5th day, and by the 6th day most of the foot had disappeared leaving a clean stump.

Both these animals were extremely lively and had no apparent difficulty in moving or climbing round their cages and did not seem to be troubled or inconvenienced by their lesion or by the eventual loss of the extremity.

Effect of Immersion in Saturated NaCl at −5°C

Six hamsters with arrested circulation and respiration were transferred to brine baths at −5°C. During rewarming the paws showed intense reactive hyperæmia but subsequently there was only slight swelling in four animals. One of the others died after 48 hr. with moderate swelling and cyanosis of both hind-paws and a minute necrotic patch at the tip of one toe.

In another animal both hind-paws showed moderate swelling, which subsided within 4 days; there was hæmorrhage into the nail-beds and two claws were lost. In four of these hamsters the margins of the pinnæ underwent dry gangrene and small portions separated and were lost.

Effect of Exposure to Cold Air

Six hamsters with arrested breathing and heart-beat and colonic temperatures of +2·8°C were transferred from icy water to cold air at −20°C, −15° to −20°, −6° to −13·5°, −8° to −10°, −6° to −7·5°, and −4° to −8°C until they had been freezing for 40 min. with body-temperatures between 0° and −0·8°C. All the animals recovered completely and within an hour showed early signs of severe frostbite to the hind-paws. Five of the six animals succumbed within 24 hr. The only long-term survivor had been exposed to an air-temperature ranging between −4° and −8°C. One of its hind-paws showed fourth-degree frostbite, and three toes were lost on the 4th day. Both its pinnæ underwent dry gangrene to about a third of their length.

Effect of Increasing Temperature Gradient between Animal and Bath

Five hamsters with heart and breathing at a standstill and body-temperatures of +2·8°C were transferred to propylene-glycol baths at −10°C. They were kept below 0°C for 40, 18, 15, and 12 min. and 6 sec. before rewarming with diathermy. They all showed unmistakable signs of peripheral freezing. The hamster which spent 40 min. below 0° regained heart-beats and peripheral circulation but failed to resume breathing and died 45 min. after rewarming began. The animals frozen for 18, 15, and 12 min. recovered completely and showed early signs of severe third-degree frostbite of all four paws. They died within 24 hr. The hamster which was below 0° for 6 sec. revived completely and showed no signs of frostbitten paws. The right pinna, which had been bent in the stiffened state, underwent dry gangrene, whereas the left pinna, which had been left alone, was unaffected. This animal was in excellent condition 13 weeks after the experiment.

Sixteen hamsters with body-temperatures of +5°C with the heart still beating slowly, but with pale paws and little evidence of peripheral circulation, were transferred to propylene-glycol baths at −5°C. Seven of these animals froze for periods varying from 30 to 45 min. After revival, six animals showed severe frostbite lesions of one or other hind-paw which underwent dry gangrene and separated.

Nine animals in this group supercooled to colonic temperatures varying from −3° to −4·7°C. They were rewarmed without any evidence of spontaneous crystallisation. Three of these supercooled hamsters showed severe fourth-degree frostbite of one hind-paw, which underwent dry gangrene and in due course separated in the usual way. In another three supercooled hamsters in this group the pinna of one ear underwent dry gangrene. Among a very large number of animals which supercooled after transfer to sub-zero baths with body-temperatures below 3·0°C frostbite lesions had never been seen.

Discussion

In these experiments, contrary to the experience of others (Josiah Macy, jun., Foundation 1951), there was no difficulty in deciding whether an animal was supercooling or freezing. The cooling curves obtained were unequivocal. Even when animals had supercooled to temperatures as low as −6°C the superficial and deep tissues were soft and pliable, in contrast to the hardness of the exterior and the crystalline consistency and appearance of the interior of the frozen animals.

The results show that freezing for periods of up to 1 hour and the presence of large quantities of ice crystals

in the skin and subcutaneous tissue was compatible with full recovery and absence of any peripheral lesions. It is clearly evident, however, that bending a part frozen in this way inevitably results in lesions which both grossly and microscopically bear a striking resemblance to frostbite in man and in laboratory animals. One therefore reads with considerable misgiving that in high-altitude frostbite the fingers were often so stiff that they could not be moved with the other hand (Davis et al. 1943). Persons likely to be exposed to the risk of frostbite and those who may have to administer first-aid should perhaps bear in mind the experimental results of trying to bend a frozen extremity.

The frostbite which resulted from application of solid CO_2 to a severely frozen paw at about −5°C may have been due to conversion of residual traces of unfrozen water to ice, or to a critical temperature having been reached, or alternatively to the sudden thermal shock to which the tissues were exposed.

The experimental evidence indicates that freezing in concentrated brine at −5°C tended to provoke mild lesions and suggests that the propylene glycol used in the majority of experiments may have had some protective action. It was curious that the slower cooling which occurred in animals exposed to cold air provoked severe lesions and that freezing at air-temperatures below −6°C resulted in a high delayed-death rate after initially successful reanimation. The rapid fall in colonic and subcutaneous temperature when animals with arrested heart-beat and circulation and deep body-temperatures of +2·8°C were exposed to baths at −10°C was also attended by high incidence of frostbite and a high mortality-rate. The occurrence of severe lesions in animals transferred to the usual −5°C propylene-glycol bath with colonic temperatures of +5°C suggests that the temperature gradient may be of great importance in precipitating frostbite and should be studied further.

Finally, it is of great interest that typical frostbite occurred in animals which had supercooled and in which no freezing of superficial tissues had occurred.

Summary

The differential diagnosis between supercooling and freezing is described, and illustrated with colonic and subcutaneous temperature records.

Of sixty hamsters which were transferred to propylene-glycol baths at −5°C, with colonic temperatures between +2° and +3°C, thirty-five froze and twenty-five supercooled. After resuscitation the pinnæ were frostbitten in two of the frozen animals and in none of those which supercooled.

Mild frostbite of paws and pinnæ occurred when brine baths at −5°C were substituted for propylene glycol.

Severe frostbite resulted when the frozen parts were bent or when solid CO_2 was applied to them.

Animals frozen in cold air (−6° to −20°C) or in propylene-glycol baths at −10°C succumbed within 24 hr. with severely frostbitten hind-paws.

Of hamsters transferred to propylene-glycol baths at −5°C with body-temperatures of +5°C, a high proportion developed frostbite of the extremities. Six of the animals with typical lesions had been supercooled, with no evidence of peripheral freezing.

I gratefully acknowledge the help of Miss R. Deanesly, D.SC., who prepared the histological sections, and of Mr. M. Young, who took the photomicrographs.

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CARCINOID TUMOUR OF SMALL INTESTINE

WITH HEPATIC METASTASES, PULMONARY STENOSIS, AND ATYPICAL CYANOSIS

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SEVERAL cases of a most unusual clinical and pathological triad comprising a small intestinal tumour with hepatic metastases, pulmonary stenosis, and an unusual type of cyanosis of the skin have been published.

Biörck et al. (1952) described a case of valvular disease of the right side of the heart with vasomotor symptoms of a peculiar type and patches of rapidly changing cyanosis in the skin. At necropsy pulmonary stenosis, tricuspid regurgitation, and a carcinoid tumour of the ileum with extensive metastases were found.

Since then Thorson et al. (1954) have described a further seven definite cases of this syndrome and discussed another nine possible ones.

Isler and Hedinger (1953) described three cases in Switzerland, and Rosenbaum et al. (1953) two in America.

In 1950 a patient was admitted to the Royal Infirmary, Edinburgh, with a most peculiar and puzzling symptom-complex. It is now obvious that he also had the syndrome first described by the Swedish workers.

Case-report

A man, aged 40, had eighteen months' history of attacks of diarrhœa. There was never any blood in the stools, which were watery and pale. At first there were only 3 or 4 loose motions a day, but latterly there had been 8 or 9. There was never any abdominal pain with this diarrhœa. For six months before admission he had become unduly breathless on exertion, until latterly he could only walk about 10 yards without severe dyspnœa. During the last month his feet and legs had become swollen and he had experienced a sensation of firmness in the upper abdomen. Recently he had experienced attacks of giddiness and difficulty in focusing his eyes, and associated with this there had been attacks of flushing of the skin of the abdomen, chest, and face, which were worse during

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the bouts of diarrhœa. He had always been healthy and had never had either rheumatism or dysentery.

On examination he showed a peculiar type of cyanosis, which at rest was limited to his face and hands. The cyanosis was reddish blue and was intensified on exertion. Telangiectases were present over his nose and cheeks, and there was generalised widening of the capillaries and postcapillary veins in these areas. He also had periodic flushing of the face, giving the skin a deep reddish purple hue, which later spread to the neck, trunk, and extremities. The retinæ on these occasions showed intense engorgement of the vessels. There was no finger-clubbing. Pitting œdema was present in the legs as far as the mid-thigh, and the neck veins were distended. The pulse was regular in time and force, the rate being 90. The blood-pressure was 120/80 mm. Hg. The apex-beat was in the fourth left intercostal space outside the mid-clavicular line. Auscultation revealed a harsh systolic murmur heard over the whole præcordium but loudest over the 2nd and 3rd left intercostal spaces. No adventitious sounds were audible in the lungs. The liver was enlarged to about three inches below the costal margin; it was firm, smooth, and not tender. No other abnormalities were detected in the other systems.

Investigations.—Electrocardiography showed right axis-deviation. Radiography of the heart and chest revealed a moderate degree of cardiac enlargement, which was entirely confined to the right side of the heart. There was no enlargement of the pulmonary arch or of the hilar vessels, and the lung fields showed diminished vascularity. Radiography after a barium meal showed unusually rapid passage of the barium through the small intestine. There was also clumping of the barium, with absence of the normal mucosal outline, and dilatation of the ileum. The colon was normal. Laboratory investigations showed a venous pressure of 17 cm. of sodium citrate; arm-lung circulation-time $5^3/_5$ sec.; arm-tongue circulation-time 25 sec.; oxygen saturation 90%+; serum-albumin level 3·99 g. per 100 ml.; serum-globulin level 4·73 g. per 100 ml.; cephalin flocculation (+3); Hb 100%; red cells 5,000,000 per c.mm.; white cells 6400 per c.mm.; prothrombin-time normal; and neither sulphæmoglobin nor methæmoglobin in the blood. Repeated bacteriological examinations of the stools were negative. Liver biopsy showed normal liver tissue.

Diagnosis.—Pulmonary stenosis with cardiac cirrhosis was diagnosed. The diarrhœa was thought to be in some way connected with the liver dysfunction.

Course.—The patient was treated symptomatically but pursued a steadily downhill course and died three months later.

Necropsy Findings.—A *carcinoid tumour* was discovered in the ileum. Metastases were present in the mesenteric and para-aortic lymph-glands. The *liver* was grossly enlarged, and numerous metastases, many of them necrotic, were present in both lobes of the liver. The intervening liver tissue showed the classical "nutmeg" appearance of chronic venous congestion. The *heart* was enlarged, this enlargement being solely confined to the right side. The right auricle was dilated, and the endocardium was diffusely thickened. The margins of the cusps of the tricuspid valve were thickened, firm, and fibrous. The right ventricle was considerably dilated, and the myocardium was hypertrophied. The pulmonary valve was stenosed, and the margins of the cusps were thickened, fibrous, and adherent along the lines of the commissures. No abnormalities were detected in the pulmonary artery, lungs, or left side of the heart.

Microscopy.—The *tumour* in the ileum was composed of polyhedral cells with well-defined spherical nuclei. The cells were arranged in solid trabeculæ and masses with a minimal stromal reaction. The tumour had infiltrated all the coats of the intestine and was present in the related lymphatics. The picture was typical of a carcinoid tumour. The *liver* showed extensive tumour infiltration and cardiac cirrhosis. Many sections of the *heart* were examined, and in none of these were Aschoff bodies or old areas of fibrosis discovered. The pulmonary and tricuspid valves showed dense fibrocollagenous thickening. There was no evidence of active rheumatism. Nevertheless, although it is extremely unusual for rheumatism to affect the right side of the heart alone, the histological appearances could well be those of a healed rheumatic endocarditis. The endocardium of the right auricle had undergone considerable fibrous thickening. With the exception of the lungs the other organs showed congestive changes.

Discussion

The interesting feature of this case, and of the other published cases, is the clinical triad of cyanosis, carcinoid tumour of the small intestine, and pulmonary stenosis.

The cutaneous phenomena were one of the most striking clinical features in this case. They comprised a reddish blue cyanosis, telangiectasis, and attacks of flushing, when the cyanosis deepened to a most frightening purplish red. This feature of the cyanosis can be explained by the pulmonary stenosis. Peacock (1866) first pointed out that when cyanosis is present in cases of pulmonary stenosis it is reddish blue, and Selzer et al. (1949) have stated that this occurs late in the disease and only when decompensation has developed.

The telangiectasis can be explained as a feature of the liver dysfunction which was so obviously present in this case, the liver showing both widespread metastases and severe cardiac cirrhosis.

The periodic attacks of intense flushing are, however, more difficult to associate with the pathological findings. Cassidy (1934) described a case of abdominal carcinomatosis with vasomotor disturbances, and since then other cases have been recorded, mainly by Scandinavian workers. Indeed Waldenström (1953) emphasises this peculiar cutaneous phenomenon as an important diagnostic sign of carcinoid tumour of the small intestine. He suggests that some substance having such a vasomotor effect may be liberated by the carcinoid tumour.

In the present case the flushing was always associated with severe bouts of diarrhœa, and during these periods the patient felt giddy and faint, had blurred vision, and was often breathless. Doubtless these attacks of flushing were in some way due to the intestinal tumour.

The symptoms of carcinoid tumours are not well known, because such tumours are usually discovered incidentally either at operation or at necropsy. Diarrhœa, which was severe in the present case and in those described by Thorson et al. (1954), is not common in this condition. Indeed Selberg (1940), reviewing fifty-three cases of carcinoid tumour of the small intestine, noted only one patient with diarrhœa.

A considerable amount of work has been done by Erspamer (1954) and Rapport et al. (1948) on the isolation and pharmacological actions of an indole derivative, enteramine or 5-hydroxytryptamine, found in argentaffin tumours. This substance increases intestinal peristalsis, constricts the bronchi, and raises the pulmonary arterial pressure, and injected intradermally it produces local congestion and venous spasm. The association of the vascular phenomena in this and other published cases with the flushing and attacks of dyspnœa and bouts of diarrhœa suggests very strongly that these symptoms were all manifestations of hypersecretion of enteramine by the tumour. The hepatic dysfunction in the present case, produced by metastases and cardiac cirrhosis, may have further prolonged the action of 5-hydroxytryptamine by delaying its breakdown to 5-hydroxy-indoleacetic acid, which is excreted in the urine.

The last component of the triad in this syndrome is pulmonary stenosis. This patient had an exactly similar lesion to that found by Thorson et al. (1954) in their cases. There was partial fusion of the cusps of the pulmonary valve with fibrosis and thickening. There was no evidence of an infundibular or membranous stenosis or septal defect. There was no history of congenital heart-disease, rheumatism, or syphilis. The valvular lesion in this patient and in those of Thorson et al. seem to differ both morphologically and developmentally from other causes of pulmonary stenosis. Is it possible, as postulated by the Swedish workers, that the prolonged secretion of enteramine with its vasoconstrictor action on the lungs and bronchi may in some way have played a part in the pathogenesis of the pulmonary vascular lesion? The action of enteramine on the

pulmonary circulation and heart will have to be investigated experimentally before any definite proof of this hypothesis can be obtained.

Summary

A case presenting the clinicopathological triad of cyanosis, carcinoid tumour of the small intestine, and pulmonary stenosis is described, and the relationship of these features is discussed.

We wish to thank Dr. W. A. Alexander and Prof. D. M. Lyon for permission to publish, and Prof. A. M. Drennan for help and advice in the compilation of this paper.

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ENDOCARDIAL FIBROSIS

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ENDOCARDIAL fibrosis as a cause of sudden death in infancy is not yet widely recognised in this country. Most reports of this condition have been published in America. 3 cases seen in this hospital in the last two years are therefore worth reporting.

Clinically there is a sudden onset of dyspnœa and cyanosis in a previously healthy infant. Other signs of cardiac failure follow rapidly if the infant survives long enough. Most of the infants affected are aged 3–6 months.

Necropsy Findings.—The heart is always enlarged and shows left ventricular hypertrophy, the affected endocardium being a uniformly dense white glistening membrane recognisable at a glance. In the vast majority of cases the left ventricle is involved, and in about 80% of cases the left side of the heart alone is affected (Dennis et al. 1953). Any, or all, of the valves may be involved, but in most cases they appear to be functionally normal.

Incidence.—In one large series (Lambert et al. 1953) there were 15 cases in 2352 necropsies; these were among 54 cases of congenital heart lesion found. In this hospital 3 cases have been seen among 10 congenital heart lesions in 128 necropsies. Endocardial fibrosis therefore seems to be a fairly common cardiac defect in infancy, and is probably the most common.

Case-reports

2 of the cases show the classical features.

Case 1.—A female infant, aged 5 months, had a sudden attack of dyspnœa and vomiting. She became cyanosed just before admission to hospital and died a few minutes later.

Necropsy Findings.—The heart weighed 110 g. The right auricle and right ventricle were normal; the left auricle and ventrical were hypertrophied; the endocardium was dense, white, and thickened; and the myocardium was unaffected. The process had involved the aortic valve, which was stenosed.

Case 2.—A male infant, aged 2 months, became suddenly cyanosed and breathless. He was admitted with the diagnosis of pneumonia. His heart was apparently normal on clinical examination. He died four hours after admission.

Necropsy Findings.—The heart weighed 61 g. (normal 23 g.) Hypertrophy of left ventricle. Well-marked endocardial fibrosis of this chamber, other chambers normal. The aortic valve was bicuspid and stenosed. The mitral valve bore a few nodular thickenings.

Fig. 2—Mitral valve from above, showing stenosis. Cut edge of thickened endocardium is seen.

Case 3.—A girl, aged $2^1/_3$ years, became slightly breathless and developed a harsh non-productive cough 3 weeks before admission. The dyspnœa became steadily worse, and her ankle and face became œdematous.

On admission she was deeply cyanosed and orthopnœic; her heart was enlarged; and a rough apical murmur was present, with gallop rhythm. An electrocardiogram on admission is reproduced here (fig. 1).

Treatment and Course.—The child was quickly digitalised and showed some improvement, but she died quite suddenly twenty-four hours after admission.

Necropsy Findings.—The heart weighed 135 g. (normal 58 g.) The right auricle and ventricle were hypertrophied, and the endocardium on this side showed the typical appearance of endocardial fibrosis; the tricuspid valve was involved and showed nodular thickening of the cusps and moderate stenosis. The left auricular endocardium showed similar changes and the mitral valve showed advanced stenosis (fig. 2). The left ventricle was normal.

On microscopic examination the affected endocardium was thickened, with an increase in both fibrous and elastic elements. The process extended in places into the myocardium for a variable distance. The endocardium appeared avascular with a smooth endothelial surface.

This case is unusual because of the normal left ventricular endocardium, with advanced mitral and tricuspid stenosis.

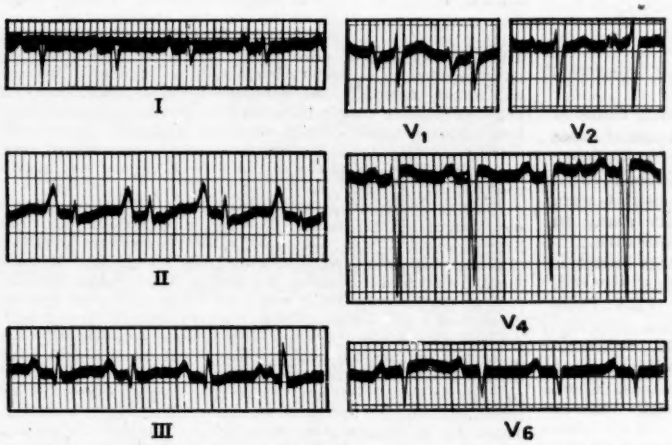

Fig. 1—Right axis-deviation and slight right ventricular hypertrophy. Abnormal P waves are seen in all leads. Great variation in T waves present.

Discussion

The ætiology of this interesting condition is unknown, but various factors

have been named. Farber and Hubbard (1933) suggested maternal infection as the cause; but no such association has ever been found, and the case described by Prior and Wyatt (1950), where one twin was affected and the other was normal, seems against maternal infection. Ischæmia of the myocardium due to obstruction of the arterio-sinusoidal and thebesian vessels was suggested by Gross (1941), Weinberg and Himelfarb (1943), and Prec and Cassels (1952) but appears to be secondary.

All the available evidence points to a developmental error; Dennis et al. (1953) suggest an overgrowth of the bulbus cordis and recall Keith's (1924) description of the capacity of this tissue to grow. This hypothesis would certainly fit the histological appearances.

Summary

3 cases of endocardial fibrosis in infants are described, including an unusual one where a normal left ventricle was found.

ADDENDUM

Since this paper was written, another child who died suddenly in hospital was found to have endocardial fibrosis:

Case 4.—A female infant, aged 7 months, was quite well until five days before death, when she started "grunting" a little and went off her feeds. The doctor became alarmed when a tinge of cyanosis appeared, and she was admitted to hospital. The only abnormal physical sign was cardiac enlargement to the right of the sternum. She died quite suddenly the day after admission. At necropsy the heart weighed 100 g. and the right atrium and left atrium and ventricle showed endocardial fibrosis. No valvular deformities were present.

The family history is interesting because a previous female child with an exactly similar history died at the age of 5 months.

My thanks are due to Dr. J. M. Stansfeld for the use of clinical notes, and to Dr. J. E. Ennis for the use of necropsy reports on cases 1 and 2.

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DIABETES INSIPIDUS WITH URETERIC OBSTRUCTION

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CANCER of the pituitary gland is a common cause of diabetes insipidus. Fink (1928) found 107 reported cases of diabetes mellitus, in 33 of which there were pituitary tumours; 18 of these were metastatic. Of Jones's (1944) 42 cases, 11 had tumours of the hypophysis; 4 were metastatic. Tumour involved the pituitary gland in 4 of Blotner's (1951) 112 cases of diabetes insipidus.

Of the primary tumours carcinoma of the breast is by far the commonest. Cancer of bronchus, thyroid, and stomach, lymphosarcoma, melanoma (Fink 1928, Jones 1944), hypernephroma, lymphadenoma, reticulosarcoma, prostatic carcinoma (Kraus 1944), leukæmia (Sheldon 1927, Kugelmeier 1937), and myeloma (Bach and Middleton 1931) account for occasional cases. These data do not include cases of hypothalamic tumour without pituitary involvement.

The following report concerns a patient in whom the pars nervosa of the hypophysis was destroyed and the ureters compressed by tumour. The resulting clinical picture was of unusual interest.

Case-report

A road-mender, aged 54, was admitted on Aug. 29, 1953, with swelling of the legs of two weeks' duration. Until the swelling began he had been at work and in good health apart from back pain following a "strain" two months before, constipation and slight thirst for one month, and a chronic cough for twenty years. He had no dyspnœa or urinary symptoms.

Examination showed distinct œdema of legs and sacral area, slight facial œdema, no increase in venous pressure or heart size, sinus rhythm, no abnormal heart sounds, blood-pressure 190/90 mm. Hg; and a few scattered coarse crepitations over both lungs. Abdomen, central nervous system, and ocular fundi were normal. Rectal examination revealed a firm mass obscuring the prostatic contours and encircling and narrowing the rectum about 7 cm. from the anus; there was no break in mucosal continuity, but the upper end of the stricture was out of reach; there was no blood on the examining finger or in the fæces. A sigmoidoscope would not pass the stricture, but a soft rubber catheter was easily passed into the bladder, which was not distended. Mr. David Band reported: "One cannot state categorically that this is a carcinoma of the prostate, but in a man aged 54 the disease may extend rapidly in the vesico-rectal fascial plane where it could involve the ureter(s)."

Investigations.—Repeated urine testing showed no albumin or deposit. On Sept. 2 the urinary specific gravity was 1·001, concentrating to 1·005 after twelve hours without water; on Sept. 3 it was 1·003, concentrating to 1·006. The urea clearance was 12% of normal. Blood-urea 141 mg. per 100 ml. (Aug. 31) and 165 mg. per 100 ml. (Sept. 8); Hb 9·8 g. per 100 ml.; erythrocyte-sedimentation rate (Westergren) 20 mm. in 1st hour; plasma-proteins normal; serum alkaline phosphatase 11 units, acid phosphatase 3·4 (King-Armstrong). Wassermann reaction negative. Electrocardiogram normal. Radiography showed normal heart and lungs, and a probable metastasis in the body of the 4th lumbar vertebra.

Progress.—Two days after admission the patient began to vomit, and vomiting continued intermittently. The urinary output could not be measured accurately, since he was becoming uncoöperative, but it averaged about 1700 ml. daily. During the first week he lost nearly all his œdema but was obviously deteriorating, with drowsiness, confusion, and vomiting—symptoms presumed to be due to uræmia.

Diagnosis presented some difficulty. The main findings were the pelvic mass and uræmia; and it was thought that these must be related, presumably by ureteric obstruction. The persistently normal urinary output, however, indicated that another factor was involved. It seemed likely, in view of the low urinary specific gravity, that in the absence of urinary-tract obstruction the patient would have had polyuria and that a daily output of 1700 ml. constituted, for him, oliguria. Accordingly, the various causes of polyuria were considered, and as many as possible excluded. Primary renal disease was very unlikely in the complete absence of abnormal urinary constituents, retinopathy, or significant hypertension. The obstruction had presumably developed too rapidly to have resulted in secondary renal failure. Diabetes mellitus was readily excluded, and a normal serum-calcium level and negative urinary Sulkowitsch reaction put hyperparathyroidism out of account. There remained Addison's disease and diabetes insipidus: either of these could conceivably have been caused by metastases in the adrenal or pituitary glands respectively.

Further Investigations and Clinical Course.—Further evidence was sought at this stage. The serum-potassium level was high (7·3 and 7 m.eq. per litre), the serum-sodium level low (134 and 138 m.eq. per litre), and the serum-chloride level normal (100 and 107 m.eq. per litre). The urinary chloride (7–8 g. per litre as NaCl) was high for a maximum specific gravity of 1·005–1·008. These features were consistent with Addison's disease, and as a further diagnostic test deoxycortone acetate 5 mg. intramuscularly was given on two successive days. It was planned to try 'Pitressin' if deoxycortone failed to provide relief, but on the second day of deoxycortone treatment the blood-pressure suddenly fell to 150/80 mm. Hg. There was no complaint of pain, since by this time the patient was virtually comatose; but a further electrocardiogram showed the pattern of a recent posterior myocardial infarct.

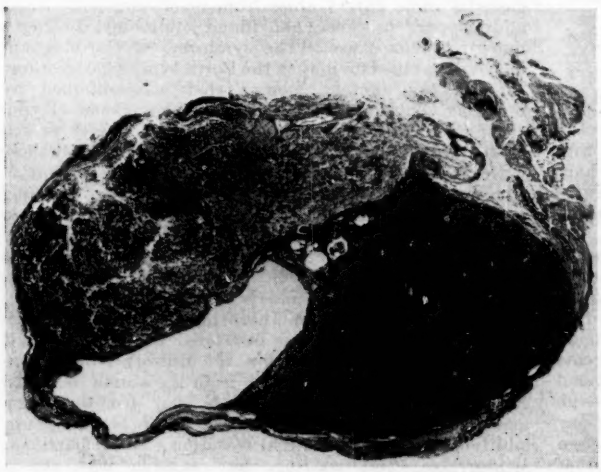

Fig. 1—Pituitary gland (× 8). From left to right: posterior lobe filled with tumour, which in this section is breaking down but is not cavitated; cyst of pars intermedia; anterior lobe with largely normal architecture.

The patient died on the following day, fourteen days after admission. Deoxycortone had brought about no obvious change.

Necropsy.—The upper lobe of the left lung contained a tumour nodule about 1·5 cm. in diameter, situated 1 cm. from the pleura and having no obvious connection with a bronchus. Firm, white, tumour tissue was present in mediastinal and abdominal lymph-nodes, in the body of the 4th lumbar vertebra, and as scattered nodules in the peritoneum. A nodule was found in the wall of the stomach; and there was a large mass of tumour in the pelvis, adhering to the sacrum, constricting the rectum, enveloping a normal prostate gland, and obstructing both ureters so that even a fine probe could not be passed into the bladder from either ureter. The pituitary gland was normal externally, but on section the posterior lobe was found to be replaced by white tumour tissue containing a cyst 3–4 mm. in diameter. The cyst contained brownish, gelatinous material, and was separate from a cyst of the pars intermedia (fig. 1). The posterior wall of the heart and the right cerebral hemisphere each contained a large infarct. The vessels supplying each area were widely patent, and no satisfactory explanation was found for either of these lesions. The kidneys showed a little pelvic dilatation but were otherwise normal.

Representative sections from the tumour in various situations showed microscopically an anaplastic appearance, with very large polyhedral cells and big, densely staining, rounded or irregular and often multiple nuclei; mitosis was frequent (fig. 2). Tumour cells were found in the anterior lobe of the pituitary, but most of it appeared intact. By contrast, no normal posterior-lobe tissue could be identified. In a few areas of the lung nodule there was some acinar differentiation, indicating that the tumour was basically a carcinoma; and, as the mediastinal nodes were the biggest found, the lung was thought to be the source.

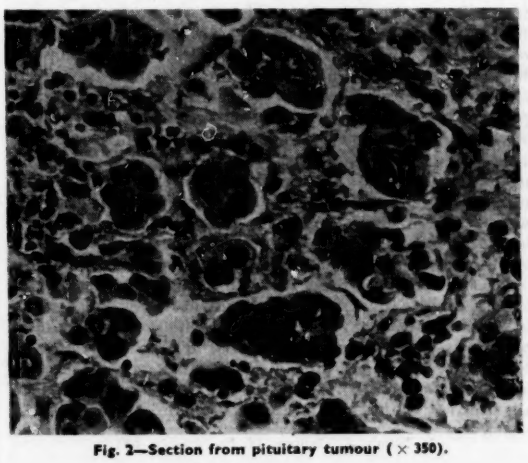

Fig. 2—Section from pituitary tumour (× 350).

Discussion

Hinman (1934) showed that when a ureter is completely obstructed the kidney at first continues to excrete urine, which is reabsorbed at the same rate from the renal pelvis. Such reabsorption is total and unselective of urinary constituents. The early result of complete ureteric obstruction is, in other words, a total shunt of urine from the renal pelvis into the circulation. By inference partial obstruction of the ureter will, if sufficiently severe, produce a partial shunt, some urine passing the block and the rest being reabsorbed. In the case of bilateral partial ureteric obstruction the occurrence of uræmia clearly depends on the volume and concentration of urine passing the obstruction.

It must be assumed that in the present case the patient had, by reason of selective destruction of the posterior lobe of the pituitary, such impairment of tubular reabsorption of water that his output of 1700 ml. daily fell short of the volume needed to avert uræmia. The amount of urine leaving the renal tubules was probably greatly in excess of the actual output. Had concentrating power been restored by pitressin, there is no reason to suppose that the pressure behind the obstruction, and therefore the volume of urine passing it, would have been reduced; recovery from uræmia would probably have resulted, although, because of increasing ureteric block, this could only have been temporary.

Ureteric compression and diabetes insipidus seem to have developed and progressed together, since there was no appreciable polyuria or oliguria at any stage. The patient's presenting symptom—œdema—could not be satisfactorily explained on the basis of cardiac or renal disease; it presumably reflected a positive water balance which had built up in the weeks before admission.

I wish to thank Dr. J. G. Macleod, Dr. J. A. Strong, and Dr. R. W. D. Turner for permission to publish and for helpful criticism in the preparation of this paper; Mr. David Band for allowing me to quote his urological report; and Dr. A. MacFarlane for the necropsy report and photomicrographs.

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"Planning is still the order of the day . . . And yet among all these plans there is one subject which is neither planned nor admitted to be unable to be planned, namely the number and quality of the future population which is to bring into being, and to enjoy the results of all these schemes . . . It is possible to plan our future towns grouped round their central fun fairs, provided adequately with three storey car parks and other conveniences, and yet unless the future population can also be planned—and it must be admitted that this is quite impossible—it seems certain that all these plans can receive at best, or at worst, only a very partial and temporary fulfilment. If these reflections were to influence anyone, the conclusion should be that planning has at present far overstepped the bounds of the reasonably possible and should be limited to necessary action to meet pressing and immediate needs."—G. K. BOWES, M.D., medical officer of health for Bedford, in his report for 1953.

Medical Societies

ROYAL SOCIETY OF MEDICINE

Small-bowel Disturbances after Abdominal Operations

At a meeting of the surgical section on Dec. 1, with Mr. HAROLD EDWARDS, the president, in the chair, the subject was toxic and nutritional disturbances in the small bowel associated with surgery of the gastro-intestinal tract.

In his introduction Mr. JOHN BRUCE was mainly concerned with pseudomembranous enterocolitis (necrotising enterocolitis). He had had personal knowledge of 12 cases, all of them fatal. Though the condition, first described by Finney in 1893, was nowadays seen more commonly after operations on the stomach and in patients receiving antibiotic treatment, only 1 of the 12 had had antibiotics: this was a patient with a perforation who was given oxytetracycline, and at eventual necropsy was found to have enteritis. The condition had arisen in 1 patient after cæsarean section, and in another after ovarian cystectomy; and in 2 it complicated cholecystectomy and in another 2 appendicectomy. In half the 107 patients reported from the Mayo Clinic [1] the preceding operation did not involve the stomach. Howie and his colleagues [2] had shown the presence of *Clostridium welchii* in the stomach after gastrectomy; and this organism could produce α toxin. In 1946 an epidemic of necrotising enteritis in Germany had been shown to be due to Cl. *welchii*. Nevertheless, Mr. Bruce inclined to Penner's and Bernheim's postulate, as yet unproved, of arteriolar spasm in the submucosa cutting off the blood-supply to areas of the mucosa. He showed slides to illustrate the loss of epithelial surface, and he pointed out that regeneration could occur from the deeper parts of the mucosal glands. He then turned to syndromes of malabsorption due to intestinal fistulæ, short-circuit operations, and massive small-bowel resections. The important feature in resections was not how much was removed but how much remained. In the case of one woman, œdema, diarrhœa, and steatorrhœa developed $3\frac{1}{2}$ years after resection of eight feet of strangulated intestine. By means of a swallowed thread it had been computed that the length from mouth to anus was five feet. (Mr. Edwards later pointed out that this method was fallacious because of the concertina effect of the bowel on the thread.) Treatment of her malnutrition had succeeded because her remaining gut was normal; and the serum-protein level returned to normal with a diet high in protein and its hydrolysates. Another patient, in whom much small intestine had had to be removed for Crohn's disease, died from subsequent malnutrition which could not be brought under control, probably because the small bowel with which she was left was not normal, though not obviously diseased.

Prof. L. J. WITTS dealt especially with anæmia. Pernicious anæmia after total gastrectomy, with consequent loss of intrinsic factor, might take many years to develop. Following partial gastrectomy it was rare, but he had seen a patient in whom pernicious anæmia developed 17 years after gastro-enterostomy. The condition might be accounted for by atrophic gastritis; the function of the mucosa could be investigated by the estimation of urinary uropepsinogen and by gastric biopsy. Estimation of the plasma-iron and plasma-vitamin-B_{12}, together with the absorption of their radioactive counterparts, was also helpful. Of 6 cases of megalocytic anæmia, 5 had been due to atrophic gastritis while only 1 arose from malabsorption. Naish and Capper,[3] however, had found jejunal insufficiency a more frequent cause. The syndrome of the stagnant loop could come into play in the Polya type of gastrectomy through the afferent loop; relief was obtained by restoring continuity by a Billroth-I conversion. Hypochromic anæmia had ensued in 12 patients after partial gastrectomy and in 2 after gastro-enterostomy. Of these patients 6 were men and 8 women, and in all but 3, who were men, there were undoubted sources of bleeding elsewhere. These were not necessarily recurrent or anastomotic ulcers but often erosions in the stomach or elsewhere in the alimentary tract. Professor Witts believed that iron in pill form sometimes promoted erosions in these cases, and it should be prescribed in powder or fluid form. Iron absorption, which took place in the upper jejunum, was interfered with because this area was by-passed in all but the Billroth-I operation, and there was intestinal hurry from the stoma onwards. Nevertheless, he did not think that iron-deficiency anæmia arose except when there was blood-loss in addition. Massive intestinal resection caused diarrhœa, steatorrhœa, and wasting, but anæmia was not a prominent feature, in contrast to sprue, cœliac disease, and idiopathic diarrhœa. Stenosis and the short-circuit loop syndrome led to steatorrhœa and megalocytic anæmia, with, occasionally, subacute combined degeneration of the cord, probably by bacterial contamination in the stagnant area. Professor Witts had seen 2 patients in whom megaloblastic anæmia had developed 11 and 13 years after hemicolectomy and ileocolostomy for carcinoma. *Dibothriocephalus latus* was known to compete with its host for vitamin B_{12}, and *Escherichia coli* might do the same. Alternatively, contaminant organisms might kill off those saprophytes which helped to make folic acid and vitamin B_{12}. When these organisms were inhibited by antibiotics the anæmia might improve and it could sometimes be cured by restoration of the normal continuity of the intestine.

Prof. IAN AIRD began by considering the complex clinical state following peritonitis. Each year 1500 patients died from acute appendicitis—half from appendix abscess, which had a mortality of 8%, and half from generalised peritonitis (12–20% mortality). In a few of those recovering from generalised peritonitis, obstruction developed because the relatively adynamic small bowel failed to overcome the mechanical embarrassment of adhesions. He had seen these patients continue for 30–40 days on treatment by gastric suction and intravenous drip. He suggested that jejuno-transverse colostomy should be performed when these circumstances persisted at the 10th to 14th postoperative day. 24 patients whom he had treated in this way all recovered from obstruction; he knew of only 1 who had later had megaloblastic anæmia requiring subsequent restoration of continuity. He thought that after obstruction had been overcome the normal channel opened up so that the anastomosis closed. When partial gastrectomy was performed for stenosis, persistent stomal obstruction was sometimes troublesome, and had been ascribed to stomal œdema. Professor Aird had operated on 2 such patients with jejunostomy in mind, only to find œdema of the jejunum so extensive that he was unable to insert a tube. Mr. Bruce had drawn attention to the radiological appearances suggesting occlusion of the jejunum in these circumstances. Professor Aird said that massive resection of the intestine caused less constitutional disturbance than a blind loop resulting from anastomosis. Distension of these loops, he suggested, had an effect on the function of the rest of the bowel. An iron-deficiency anæmia was the presenting symptom in a patient with carcinoma of the hepatic flexure which had also caused a brief short-circuit into the transverse colon. He ascribed

1. Pettet, J. D., Bagenstoss, A. H., Dearing, W. H., Judd, E. S. *Surg. Gynec. Obstet.* 1954, 98, 546.
2. Howie, J. W., Duncan, I. B. R., Mackie, L. M. *Lancet*, 1953, ii, 1018.
3. Naish, J., Capper, W. M. *Ibid*, p. 597.

this to distension of the bowel in that region and not to the presence of the carcinoma itself.

In the discussion, Mr. MAURICE EWING described the difficulty he had had in inducing anæmia experimentally in rabbits and dogs by artificial pouches. Professor Witts had met the same difficulty in rats. Prof. CHARLES ROB had seen 7 cases of pseudomembranous enterocolitis, and coagulase-positive staphylococci in profuse growth were recovered from the stomach. Treatment with oral penicillin in large doses and massive replacement intravenous therapy had saved lives. Mr. NORMAN TANNER found that there was a steady fall in the hæmoglobin level year by year after partial gastrectomy, and this was greater in women. The presence of a small fringe of gastric mucosa would prevent megaloblastic anæmia. Dr. W. A. BOURNE gave the figure of 8% for the prevalence of atrophic gastritis after partial gastrectomy. The PRESIDENT recalled 2 patients who, under the care of Sir Arbuthnot Lane, had had ileosigmoidostomy performed without intervening resection—one for obstruction, the other for constipation. The president had seen them 35 years later and there had been no sign of anæmia.

Reviews of Books

Textbook of Operative Surgery

ERIC L. FARQUHARSON, M.D., F.R.C.S.E., F.R.C.S., surgeon, Royal Infirmary, Edinburgh. Edinburgh and London: E. & S. Livingstone. 1954. Pp. 853. 75*s*.

IN these days of specialism it is no mean task to produce single-handed a comprehensive work on operative surgery. To compress it into one volume adds to its attraction, and Mr. Farquharson has not achieved his compression at the expense of the contents. The book starts (as it should if it is to guide the embryo surgeon) with knots and with methods of suturing skin and tendon, of skin-grafting, and of tendon transplantation. It is probably sound that the descriptions of procedures and techniques which follow should have a flavour of traditionalism; but this leads to some anomalies of emphasis, for the newer operations are sometimes described in smaller type than others which are obsolescent or obsolete. Thus gastrogastrostomy and duodenojejunostomy receive full status, while pneumonectomy and lobectomy appear as adolescents. But Mr. Farquharson has written his book for the general surgeon in training (though the fully fledged will also appreciate it) and examiners have a habit of inquiring about these things.

The illustrations have been collected from many sources; most of them are good, and with the concise text they offer valuable instruction. The gynæcologist and otorhinolaryngologist will not find his future specialty represented, but other intending surgeons may buy this book without fear of disappointment.

Biochemical Investigations in Diagnosis and Treatment

JOHN D. N. NABARRO, M.D., M.R.C.P., assistant physician, Middlesex Hospital. London: H. K. Lewis. 1954. Pp. 299. 25*s*.

OF late years the use of biochemical tests in the diagnosis and control of treatment has advanced so far that clinicians find it hard to know what examinations are likely to help in an individual case—and what interpretation should be placed on the results. Dr. Nabarro has set out to give guidance on these matters, and in 258 pages his book contains an enormous amount of useful information. The difficulty, however, is to cover so many topics adequately in the space.

Some of the sections, such as that dealing with the electrolytes and acid-base balance, are excellent, but others do not entirely fill the bill: for example, the sections on management of patients with diabetes mellitus and the treatment of diabetic ketosis are in such general terms that they may not appeal to a registrar, who probably knows a good deal already, and may not be detailed enough for the newly qualified houseman.

Numerous liver-function tests are discussed, but perhaps not critically enough; and the treatment of some everyday problems, such as differential diagnosis of jaundice, could be expanded and would be more helpful if fewer tests were considered in more detail.

The statement on p. 63 that alkaline phosphatase is normal in prostatic cancer does not agree with general experience: in many cases the rise in the alkaline enzyme is even more striking than that of the acid enzyme. The differentiation of prostatic acid phosphatase from other acid phosphatases by formaldehyde should be mentioned.

A very valuable section is the set of tables at the end giving normal ranges for a very extensive series of blood, urine, and fæcal analyses; the division of these into "investigations usually undertaken in hospital laboratories" and "investigations not usually undertaken . . ." should help the clinician to know what he may reasonably request, and will also help the biochemist when he has to point out how much work is involved in some of these tests.

These criticisms should not obscure the many merits of the work. The next edition, however, would gain by more selection, even if this means less comprehensiveness; and we hope that the common tests and clinical conditions will be given fuller and more critical consideration.

Recent Advances in Pædiatrics

Editor: DOUGLAS GAIRDNER, D.M., F.R.C.P., pædiatrician to Addenbrooke's Hospital, Cambridge. London: J. & A. Churchill. 1954. Pp. 465. 42*s*.

SINCE 1935 when the last volume on pædiatrics in this series appeared, the care of children in the British Isles has undergone a revolution as complete as it was unpredictable. Pædiatrics is now one of the major, as well as one of the most vigorous, branches of medicine, and this volume adequately reflects its scope and range.

In twenty chapters by 18 authors, nearly every important aspect of pædiatrics is covered, and recent advances and new syndromes are well described. Reflecting our recognition of the importance of the first few weeks, nearly a quarter of the book deals with problems of the newborn infant, prematurity, the physiology of respiration, and hæmolytic disease of the newborn. Two important subjects are not discussed—modern concepts of acute respiratory infection, and the management of acute and chronic urinary infections. But it is certainly difficult to see what the editor might have usefully excluded in their favour. The chapters are nearly all well and tersely written, and all have useful bibliographies. It is assumed throughout that the reader has some knowledge of pædiatrics, for the work is not intended as a student's textbook.

For those taking higher or specialist examinations it presents the most up-to-date information; for those in pædiatric practice it demonstrates "the growing edge of current pædiatrics."

Connective Tissue in Health and Disease

Editor: G. ASBOE-HANSEN, M.D., Connective Tissue Research Laboratory, University Institute of Medical Anatomy, Copenhagen. Copenhagen: Munksgaard. 1954. Pp. 321. Danish Kroner 50.0.

INTEREST in connective-tissue disease has revived with the advances in techniques of investigation and new methods of treatment during the last decade. These now cover wide areas of experimental and clinical science, and—to mention only a few—include the hyaluronidase-spreading effect, chromatography and electrophoresis in tissue, analysis electron microscopy, histochemistry and tissue-culture, and hormone effects in the experimental and the clinical field. This book, under the careful editorship of Dr. Asboe-Hansen, is a welcome attempt to survey facts established and progress made at this arbitrarily chosen stage, when therapeutic applications are largely still obscure, or, at the best, inchoate.

The contributors are mostly American and Scandinavian authors. The first, and most useful, half deals with normal morphology, histology, and biochemistry, and with some of the important biological responses of connective tissue. It is a remarkably up-to-date and clear account of present work and trends, which makes no untimely pretence of synthesis. Pituitary and adrenal hormone effects are summarised without speculation, and the sections on their relation to amyloidosis and infection are of considerable interest. Topical themes

rightly receive most attention, but it is a pity that so little mention is made of tissue changes in relation to antibody formation and action, or of immunological aspects of connective-tissue pathology. The concluding chapters on connective-tissue diseases include discussions of collagen diseases, arteriosclerosis, and arthritis and related diseases of skin and eye. They show how many problems of pathology and treatment are still unsolved.

Clinicians, pathologists, and research-workers will all find this book an admirable and stimulating progress report; but they may well lament the lack of an index.

Advances in Internal Medicine

Vol. 6. Editors: WILLIAM DOCK, M.D., *Long Island* College of Medicine, Brooklyn; I. SNAPPER, M.D., Beth-el Hospital, Brooklyn. Chicago: Year Book Publishers. London: Interscience Publishers. *1954.* Pp. 375. 75*s*.

THIS volume, like its predecessors, is not merely a general postgraduate review of internal medicine as a whole, but also a scholarly and detailed study of a few selected subjects for both clinician and research-worker. The experienced and thoughtful investigator will find all the papers very well documented, with full bibliographies. The exciting accounts of glucagon, and of the quantitative estimation of insulin in blood both in vivo and in vitro, deal with two very important aspects of sugar metabolism. There are some ten articles, which include full and lucid reviews of porphyria, diaphragmatic hernia, L.E.-cell phenomenon, liver and kidney biopsy, and spatial vector cardiography.

My Life with the Microbes (New York: Simon & Schuster. 1954. Pp. 365. $5.00).—Prof. Selman A. Waksman's major contributions to knowledge have been in the microbiology of the soil, a subject which, as he complains more than once, many people find uninteresting. It was a biologist's interest in the ecology of micro-organisms which led him to the study of their antagonism and from there to the discovery of streptomycin. Great men seldom write great autobiographies, and in these days one success story is much like another—speeches delivered, persons met, dinners eaten. Professor Waksman, however, succeeds in leaving with us a clear-cut picture of himself as a man distinct from his fellows. Painstaking and assiduous in his duties, fond of his family and loyal to old friends, honestly delighted by deserved fame, he does not hide a self-righteous intolerance of those who do not reach his standards and some lack of generosity to those who have ploughed furrows parallel to his own. The story of his childhood in the Ukraine and his subculture as a young man to the United States makes it easier to understand how much his adopted home and its learned professions owe to those who, like him, sought a land of opportunity and tilled it with all their might.

Varicose Veins (2nd ed. London: Butterworth. 1954. Pp. 285. 55*s*.).—Venous pathology is beginning to appeal to a wider audience than formerly, as the appearance of a second edition of Mr. R. Rowden Foote's book shows. Though not in any way a complete survey, this is a useful handbook for general practitioners, well produced and illustrated; and the historical aspects of the subject are entertainingly described. There are many omissions, however; the importance of incompetence of the small saphenous vein is scarcely mentioned, and the work on venous-pressure measurements, which has contributed so greatly to our knowledge, gets but cursory notice. Moreover simple subjects are sometimes made difficult and obscure by discursive treatment, and a reader seeking definite instruction on how to treat a condition may be confused by the profusion of treatments offered. The section dealing with the straightforward examination and treatment of great saphenous incompetence by high ligation and stripping is good and forms the backbone of the book.

Chemotherapy in the Treatment of Tuberculosis (London: National Association for the Prevention of Tuberculosis. 1954. Pp. 60. 5*s*.).—This booklet contains short papers—presumably designed primarily for the general physician—on various aspects of the antibacterial treatment of tuberculosis, including the development of drug resistance and the use of the drugs in extrapulmonary tuberculosis.

New Inventions

AN OXYGEN-CYLINDER CARRIER

WITH the advance of surgery and anæsthesia it has become increasingly important that oxygen should be readily available for the patient after operation, particularly on his way from the operating-theatre to the ward, whether on a trolley or a bed.

It is convenient to be able to fix the oxygen cylinder to the trolley or the bed, many beds and trolleys now

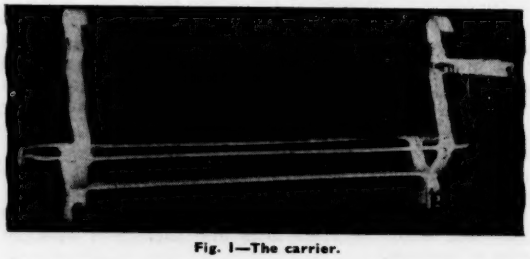

Fig. 1—The carrier.

have a built-in cage for this purpose. If, however, such are not in current use, it is more economical to adapt the existing ones than to buy new ones. We have designed a cylinder carrier which will fit any standard theatre trolley or hospital bed. It can be moved from one trolley to another, or from trolley to bed, without difficulty, and it is unobtrusive.

Its main features are shown in fig. 1. The hooks enable the cage to be slung from the side of a bed (fig. 2).

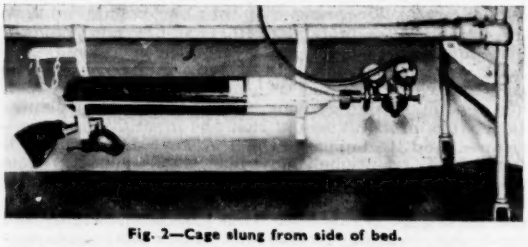

Fig. 2—Cage slung from side of bed.

Alternatively the forks on the base of the cage fit over the horizontal bar of a trolley and the fork at one end of the cage fits over the vertical bar at the foot of the trolley and is held in position by a drop-ended bolt (fig. 3). Clips are provided into which may be fixed a mask and reservoir bag, assuring that these are available at all times to assist the patient's respirations.

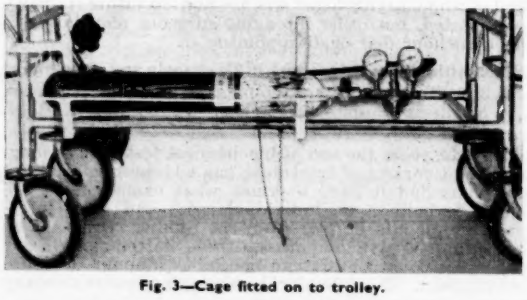

Fig. 3—Cage fitted on to trolley.

This oxygen-cylinder carrier was made in the hospital works department, at very little cost, from scrap-iron from an old bedstead.

Our thanks are due to Mr. C. Liptrott of the works department, and to the photographic department, at St. George's Hospital.

RONALD A. GREEN
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FRANK KILLICK
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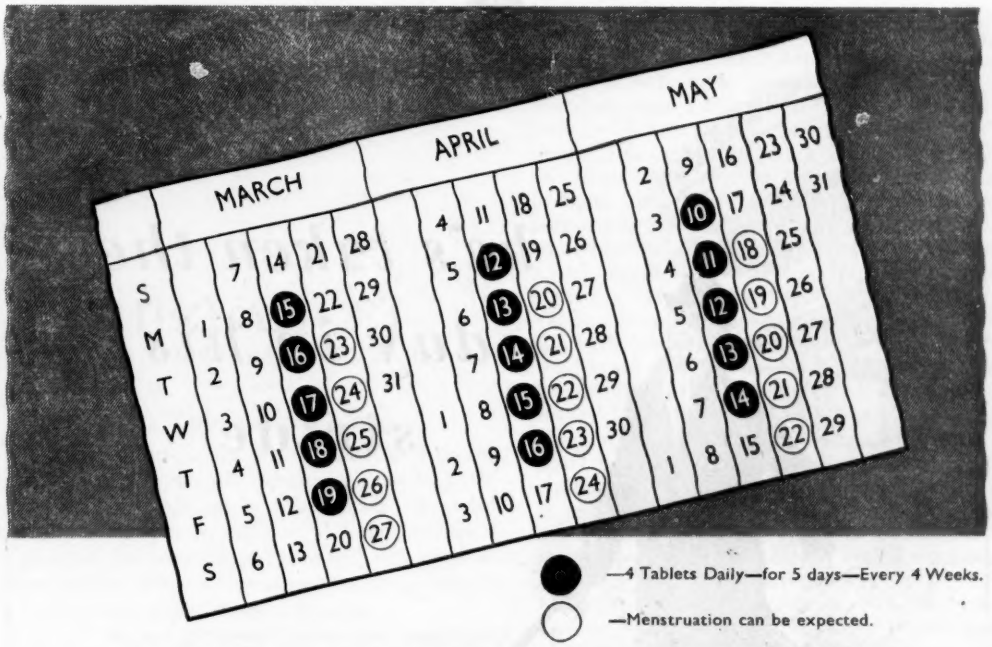

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THE LANCET
LONDON: SATURDAY, DEC. 18, 1954

Mass Tuberculin Testing

THE tuberculin test has proved useful in diagnosis, and has provided valuable information on the pathogenesis and development of tuberculosis; by establishing the relation in time of different lesions to initial infection it has helped to clarify the evolution of the disease. Now evidence is accumulating regarding its value as an epidemiological weapon.

Ireland's special problems have been emphasised by the national tuberculosis survey.[1] In 1952 there was only limited information about the state of tuberculisation in County Roscommon. Now the county medical officer reports "a fairly complete epidemiological knowledge of tuberculosis in our field, and of the extent to which the County Tuberculosis Scheme is covering the problem."[2] This wholesome change was effected with the help of the National B.C.G. Committee of Ireland, which furnished a team consisting of doctor, nurse, and clerk. All the 170 schools in the county were visited and the children were tuberculin-tested with O.T. dilutions 1 : 5000 and 1 : 100; testing was also offered for pre-school children and young adults, and altogether 10,824 persons were investigated. The programme, completed in the summer of 1953, yielded clear information. The low rate of tuberculin-positivity in pre-school children (2·1%) and in those under 10 years of age (4·8%) indicated that bovine tuberculosis was no great problem in the area. Evidence supporting this view was obtained by tracing 362 (68·8%) of 526 positive reactors to a human source of infection; of the remaining 164, 117 were the sole positive reactors in their families, again suggesting that a bovine source was unlikely. The survey also brought to light 11 new active cases of pulmonary tuberculosis (3 more than had been detected in three years by mass miniature radiography), leading to the conclusion that in a rural area "M.M.R. is of limited value from a case-finding aspect, except when following a tuberculin survey." Perhaps the most significant finding (though the figures are small) was that at 18 years of age only 14·5% were tuberculin-positive, and in the 15–24 age-group as a whole just under 25% were tuberculin-positive. "It is obvious that in this county, the young adult—the potential emigrant—is the most vulnerable person. It is on this group, therefore, that a future B.C.G. scheme should concentrate." FLYNN and JOYCE[2] consider that "since many Irish emigrants return home for treatment or are diagnosed after their return" the morbidity-rate in those who go to Britain is probably considerably higher than that suggested by HESS and MACDONALD,[3] who estimated it at not less than three times that for native Londoners. Two correspondents this week agree on the need for tuberculin-testing and B.C.G. vaccination of those emigrating to this country. The figures for County Roscommon bring home forcibly the hazard of outside contact: of 121 patients, aged 15–34, with pulmonary tuberculosis, 72 (60%) had resided in towns beyond the county.

In Britain there have been few tuberculosis surveys, apart from that undertaken by the Medical Research Council. Significantly, JONES DAVIES[4] in 1950 found in mid-Wales a situation closely resembling that now recorded in rural Ireland. Of elementary-school children, only 6·5% reacted; bovine infection was rare, and in 75% the infection was traced to a likely human source. The influence of contact with the outside world was apparent in a higher prevalence of reactions among children who had visited relations in the Midlands and South Wales. (HESS and MACDONALD have suggested that in rural Wales and in parts of the Scottish Highlands and Islands priority should be given to B.C.G. vaccination, which would of course be preceded by mass tuberculin testing.) In London two recent surveys have shown that the proportion of school-children positive to tuberculin is startlingly low. On p. 1274 of this issue Dr. PALMER and his colleagues report under 30% reactors to 5 T.U. at the age of 14 in children at Fulham schools; while the London County Council, as a result of their B.C.G. campaign, have found only 15% positive to 10 T.U. at the age of 13 in health division 1 (Chelsea, Fulham, Hammersmith, and Kensington). How much this is due to elimination of bovine infection is uncertain, but there must have been a notable reduction of human-type infection in the past few years.

There is little doubt that the tuberculin state of the population is changing rapidly, and that reorientation of thought and outlook is required. It is scarcely likely that correct decisions can be reached if facts such as those recorded in the two London surveys are not ascertained on a country-wide basis. The downward trend of infection-rates in at least some urban communities suggests the need for a wider epidemiological approach to the detection and protection of those at risk. The W.H.O. Expert Committee on Tuberculosis, in its sixth report (summarised on p. 1276), rightly insists that B.C.G. vaccination campaigns should be centrally organised and made part of the general public-health programme. For the tuberculin survey on which any such campaign must be based, no great expenditure is needed. If in each region one miniature-radiography unit were diverted

1. Tuberculosis in Ireland: Report of the National Tuberculosis Survey (1950–53). Dublin, 1954. See *Lancet*, Oct. 30, 1954, p. 903.
2. Flynn, M. P., Joyce, J. C. *Tubercle*, 1954, **35**, 270.
3. Hess, E. V., Macdonald, N. *Lancet*, July 17, 1954, p. 132.
4. Jones Davies, T. E. *Brit. J. Tuberc.* 1950, **44**, 1.

to community survey work (i.e., undertaking tuberculin testing as well as radiography of selected groups or in selected areas) within a year the information obtained would display the tuberculosis problem of the country in sharp outline. There are, of course, difficulties. More than one public authority is involved; agreement concerning the best method of tuberculin testing has still to be reached (a research committee of the British Tuberculosis Association is investigating this); nurses trained in reading results are required; and the means of bringing particularly the young adult into the survey demands forethought. But the opportunity for such reconnaissance work, invested with an intriguing detective quality, should stimulate interest.

Treatment of Syphilis

IT is now more than ten years since penicillin was first shown to be effective in the treatment of syphilis—a discovery which opened the way to an intensive controlled investigation which is perhaps without parallel in the history of medicine. The World Health Organisation has chosen this as a suitable time to review the results and to summarise modern ideas.[1]

Experience has shown that *Treponema pallidum*, though very sensitive indeed to penicillin, must be exposed to the drug longer than is necessary with most other micro-organisms; and during treatment the blood-penicillin content should not be allowed to fall below an effective level long enough to allow recuperation or fresh multiplication of the treponemes. The reproductive cycle in vivo has been computed to take about thirty hours, and it has been thought inadvisable to allow the blood-penicillin level to fall below 0·03 unit per ml. for more than twenty-four hours during the period of active treatment. In the very early stages of syphilis four days of continuous exposure of the tissues to penicillin may suffice for cure; but with so variable a disease a margin of safety is desirable, and commonly treatment of early seronegative syphilis is continued for not less than five to seven days and of early seropositive syphilis for not less than two weeks. (There is no evidence that treatment of longer duration or with higher penicillin levels will produce better results; nor, apparently, is advantage derived from intermittent high levels of the drug in the serum or tissues.) The introduction of repository preparations of penicillin has made possible the application to outpatients of treatment on these lines; and the preparation which has been most widely used in recent years is a suspension of procaine penicillin in oil containing 2% aluminium monostearate (P.A.M.). The marketing of some inferior brands of P.A.M. led W.H.O. to fix certain standard requirements,[2] by which a "test dose" of 300,000 units injected intramuscularly into 10 healthy adults doing normal ambulant work would cause in the majority a penicillin level of not less than 0·03 unit per ml. of serum for at least seventy-two hours.

Benzyl amine salts of penicillin in watery suspension have since been shown to have an even more distinct repository effect than P.A.M.; and preliminary evidence suggests that the administration of a single dose of 2,500,000 units of one of these preparations—benzathine penicillin G—is effective against early syphilis in more than 90% of cases.[3] In the early stages of the disease the treponemes multiply rapidly, and the quantity of penicillin required for cure is related to the number of organisms present in the host. In the seronegative stage very small doses may cure, but later larger doses are needed. ALEXANDER et al.[4] found that in patients with seropositive early syphilis the proportion of relapses fell from 12·8% after 1,200,000 units of P.A.M. was given to 6·5% after 2,400,000, and 2·5% after 4,800,000, units were given. In early syphilis, which includes primary, secondary, and early latent infection (that is, symptomless seropositive syphilis within the first two years) results are not improved by higher doses than 4,800,000–6,000,000 units of P.A.M.; and apparently dosage of this order is used for all stages of early syphilis in nearly 80% of 277 clinics throughout the world which provided information in reply to a questionary from W.H.O. Commonly 600,000 units of P.A.M. is administered intramuscularly every day or every second day until the required total has been reached. Daily injections of this kind cause an accumulation of penicillin in the blood rising to 1 unit per ml. of serum after ten days, and giving an effective level for seven to ten days after treatment has been completed. If the drug is given every second day the accumulation is slower, reaching 0·5 unit per ml. of serum after ten injections (that is, on the twentieth day), and an effective level persists for six to eight days thereafter. By another scheme of treatment, which has proved particularly valuable in under-developed countries, a large single dose of 1,200,000 or 2,400,000 units of P.A.M. is given intramuscularly in two or four "depots." This ensures a relatively high proportion of cures even if patients default from further treatment. Replies to the W.H.O. questionary made it clear that the tide of world opinion is flowing strongly towards the conclusion that penicillin alone suffices for the treatment of early syphilis and that the older remedies now have no place. Of those who replied, 65% used penicillin alone and 29% used it in combination with other drugs. In this respect Europe has been slow to change; all clinics in North America used penicillin alone, but in Europe only 52% of clinics relied on it entirely.

Changes in methods of treatment have led to changes in the clinical manifestations of relapse and reinfection. Whereas with older remedies subcurative doses were given over long periods, nowadays curative doses of penicillin are administered in a very short period. Accordingly the development of true immunity is often prevented, and reinfection may, like the first infection, cause early lesions. When reinfection followed treatment with arsenic and bismuth early lesions were extremely rare, because of immunity and therefore non-reactivity of the tissues, and presumably sometimes because reinfection took place during the protracted treatment. Relapses after treatment with penicillin generally occur early—within four to nine months. There is still great

1. Idsoe, O., Guthe, T., Christiansen, S., Krag, P., Cutler, J. C. *Bull. Wld Hlth Org.* 1954, **10**, 507.
2. *Tech. Rep. Wld Hlth Org.* 1952, no. 56.
3. Shafer, J. K., Smith, C. A. *Bull. Wld Hlth Org.* 1954, **10**, 619.
4. Alexander, L. J., Schoch, A. G., Mantooth, W. B. *Amer. J. Syph.* 1950, **34**, 420.

difficulty in distinguishing between infectious relapse and reinfection. From the points of view of treatment and prognosis this distinction is not really important; but it is important to detect reinfection, so that sources of infection and contacts may be sought. The indications for re-treatment, in addition to clinical evidence of relapse or reinfection, are serological relapse or persistence of positive serological tests after six to twelve months. Follow-up after treatment must include frequent reliable quantitative serological tests; the trends of rise or fall in titre are even more important than positivity or negativity.

Latent syphilis in the later stages is usually treated by 6,000,000 units of P.A.M. divided into doses of 600,000 units daily or every second or third day. The ultimate outcome in such cases has not yet been determined; but there is some evidence to show that patients have no signs of neurosyphilis or cardiovascular syphilis after observation for six or more years,[5] and that serological tests tend to show a slow fall in titre. There is no evidence that in such cases persistence of positive serological tests after treatment implies greater risk of subsequent progression of infection and late complications than if the tests had become negative. The same dosage and method of administration are satisfactory for the treatment of gummata of the skin, mucous membranes, bones, and internal organs. Herxheimer reactions have been rare in the treatment of these cases, and most physicians have no qualms about using penicillin at once; but such patients may have lesions of vital organs without symptoms or signs, and preliminary treatment with bismuth may prevent occasional catastrophes. Similarly, the dysfunction of internal organs that may result from rapid healing of gummata after intensive treatment—what is sometimes called "therapeutic paradox"—has led some investigators to recommend preliminary administration of bismuth. Gummatous lesions do not, of course, heal at once after treatment with penicillin: healing takes one to two months or even longer. Penicillin has also been accepted as the remedy of choice in the treatment of syphilitic disease of the cardiovascular system; here the prognosis depends on the extent of damage before treatment is begun, the cardiac reserve, and the age and occupation of the patient. Commonly 6,000,000–9,000,000 units of P.A.M. is given in divided doses of 600,000 units over a period of two to five weeks. The American view, which W.H.O. evidently endorses, is that Herxheimer reactions are unusual in such cases and not to be feared unless the patient has neurosyphilis. But whether any benefit from speed justifies even a very slight risk of a reaction is questionable, and many workers in this country have continued to give bismuth before starting intensive treatment. In these and other cases the Herxheimer reaction cannot be prevented or diminished by starting with small doses of penicillin. The reaction is of the "all or none" type.

It was at first believed that penicillin did not pass from the blood into the cerebrospinal fluid; but it is now known that in the presence of meningeal inflammation penicillin injected intramuscularly does pass into the cerebrospinal fluid, and intrathecal injections, which are potentially harmful and even dangerous, are unnecessary. The most satisfactory time to treat patients with neurosyphilis is before the clinical manifestations have appeared; involvement of the central nervous system is usually manifested by changes in the cerebrospinal fluid early in the course of the disease—perhaps years before symptoms and signs develop. Accordingly the cerebrospinal fluid should always be tested during the initial investigation of all cases of late syphilis and as part of the tests of cure after treatment of early syphilis. Neurosyphilis is commonly treated by administering about 9,000,000 units of P.A.M. divided into doses of 600,000 units given every second day; further similar courses are needed in some cases. Here again some prefer to start with bismuth, while others accept the risk of a Herxheimer reaction and use penicillin at once. In general paralysis bismuth will not prevent a Herxheimer reaction, and the risk has to be taken. Another special problem is syphilitic primary optic atrophy—a condition which, despite all treatment, often progresses to blindness. Because of the rapidity with which progression may occur, many take the view that preliminary treatment with bismuth is a waste of time; and there are still some who prefer to follow intensive treatment with penicillin by malarial therapy, which is also effective. The prognosis is always uncertain, but where the decline in vision has been arrested for twelve months there is reasonable ground for hoping that further deterioration will not occur. The need for further treatment of neurosyphilis can seldom be decided by clinical examination alone. After treatment the neurological signs are more likely to reflect residual changes than an active process. Progress must be estimated mainly by tests of the cerebrospinal fluid, which should be repeated every third or fourth month in the first year after treatment and then once yearly for some years. As the result of successful treatment the cell-count and then the quantity of protein return rapidly to normal, but changes in the colloidal and complement-fixation or precipitation reactions are likely to be delayed. DATTNER et al.[6] put forward the view, now widely accepted, that the cerebrospinal fluid may be regarded as "inactive" if the cell-count is normal, even when the other tests do not show full response. In such cases after treatment with penicillin the syphilitic process may be deemed to be arrested, and further treatment is unnecessary regardless of the clinical findings. On the other hand, persistently high cell-counts or increase in cells following normal findings indicate activity of the syphilitic process and the necessity for further treatment.

Penicillin has proved particularly effective in the prevention of congenital syphilis; good results are usually obtained even if treatment is given as late as the last week of pregnancy. A common dosage is 4,800,000–6,000,000 units of P.A.M., of which 600,000 units is given every second or third day; but late in pregnancy it may be necessary to intensify treatment. Whether when penicillin has been given very early in pregnancy a further course should be given late in pregnancy, and whether syphilitic women so treated should again be treated in subsequent pregnancies, are questions that can be answered only in relation to particular patients and particular circumstances.

5. Chester, B. J., Cutler, J. C., Price, E. V. *Ibid*, 1954, **38**, 7.

6. Dattner, B., Thomas, E. W., De Mello, L. *Amer. J. Med.* 1951, **10**, 463.

There is no evidence that neglect of either precaution involves risk to the fœtus, provided that the initial treatment has been adequate, the patient has been properly observed and tested, and infected sexual partners have been traced and adequately treated. If a child is born with clinical signs of syphilis, treatment should be instituted at once irrespective of the results of serological tests—which are sometimes negative. Total dosage of P.A.M. may be in the neighbourhood of 250,000 units per kg. of body-weight, divided into ten doses given every day or every second day. Clinical examination and serological tests are repeated monthly in the first year, six-monthly in the next two years, and then at increasing intervals throughout childhood and adolescence. If the child of a treated syphilitic mother is born without clinical signs of syphilis but the serological tests are positive at birth it is by no means certain that the child has syphilis, for "reagin" can be transferred from mother to fœtus through the placental circulation. In such a case the titre of the quantitative test may be expected to be lower in the child than in the mother, and the positive test in the child will become less strongly positive and then negative within two months of delivery. The diagnosis of congenital syphilis should be based on clinical findings, radiographic changes in the long bones, and the behaviour of the serological tests; and only exceptionally is it justifiable to give antisyphilitic treatment before the diagnosis has been firmly established. Where the child of a treated syphilitic mother is born without clinical signs of syphilis and the serological tests are negative at birth, this means that the child is well unless infection has occurred very late in pregnancy or insufficient prenatal treatment has prolonged the time taken for serological tests to become positive. In such cases it is important to keep the child under observation and to do repeated tests. How long this observation should be continued is not agreed. Most consider that six months is sufficient, but others would continue it for one to two years. When the diagnosis is made late in the course of congenital syphilis the serological tests no longer indicate reliably the efficacy of treatment, and the dosage of penicillin must be decided by analogy with late acquired syphilis in the adult, by the results of tests of the cerebrospinal fluid, and by long-continued observation. The dosage is based on body-weight, as in the earlier stages of congenital syphilis; but with older children there is a tendency to increase the total dose of P.A.M. to 4,800,000–6,000,000 units. The special problem of interstitial keratitis (which is not certainly the direct result of treponemal activity) has been largely solved by local application of cortisone, which has improved the prognosis of this serious complication.

The introduction of penicillin in the treatment of syphilis has proved one of the most remarkable therapeutic advances of recent times; it is the fitting climax of many years of achievement in the study of the disease which began with the discovery of *Treponema pallidum* in 1905. But the ease and apparent safety with which it can be given are deceptive. As with most other remedies its effectiveness and safety depend greatly on the care and discretion of those who prescribe it. Moreover the venereal diseases, despite advances in treatment, still strike terror in the hearts of many patients, and fear and uncertainty about infection are often more catastrophic than infection itself. "Diagnosis before treatment" is a safe rule.

Necropsy Statistics

NECROPSY records very rarely indicate the absolute frequency of any particular finding: too many factors of selection are involved, and, particularly where negative findings are being recorded, too much depends on the thoroughness with which the necropsy has been done. When the pathologist is recording data with a plan in mind, these are likely to be reliable; but when he is merely accumulating facts for the future it is hard for him to achieve reasonable accuracy without being swamped in detail. Reported necropsy studies of the frequency with which various neoplasms give rise to secondary tumours in the brain illustrate the effect of selection. The series of MEYER and REAH,[1] from the London Hospital, gives the lung as the source of well over half the cerebral secondaries found, mammary and gastric growths following with about a tenth each. LESSE and NETSKY [2] and WILLIS,[3] on the other hand, put mammary tumours at the head of the list. This difference probably reflects differences in admission policy. But there are surprising differences in the total frequency of cerebral metastasis: in 500 cancer cases, WILLIS found only 29 with intracranial deposits; whereas in 595 cases, LESSE found 207. Thus in WILLIS's cases, which were recorded mainly in Australia, cerebral secondaries were more than six times less common than in LESSE's cases, which were recorded in New York. If this discrepancy is not due to selection, it is due to a very remarkable geographical difference in the behaviour of malignant disease. Older figures show more easily explicable differences; neither KRASTING [4] nor RAU [5] had to deal with carcinoma of the lung, and they found an incidence of intracranial metastasis even lower than that recorded by WILLIS.

The main lesson is surely clear: the common mammary and pulmonary growths are often associated with cerebral secondaries, and neoplasms of breast and lung should be looked for whenever an apparently primary intracranial tumour is found. It is doubtful whether much more can be learnt now by elaborate statistical handling of bulked figures to give over-all age or sex distribution, irrespective of the type of neoplasm. Despite the current liking for figures and the easy way they lend themselves to tabulation, detailed study of individual cases of one given type of disease is likely to contribute more to knowledge. This is not a popular view: the eye of readers is still drawn to the large series, and it is far easier to collect many superficial figures than to follow the tangled behaviour of a growth in the infinite variety of the single patient. Fresh ideas and fresh techniques of study are more likely than additional figures to explain why pulmonary growths favour the brain, or why one patient gets thousands of secondaries, and another but one.

1. Meyer, P. C., Reah, T. G. *Brit. J. Cancer*, 1953, **7**, 438.
2. Lesse, S., Netsky, M. G. *Arch. Neurol. Psychiat.* 1954, **72**, 133.
3. Willis, R. A. Pathology of Tumours. London, 1952; p. 178.
4. Krasting, K. *Z. Krebsforsch.* 1906, **4**, 315.
5. Rau, W. Ibid, 1922, **18**, 141.

Annotations

TRICHLOROETHYLENE AND THE MIDWIVES

TRICHLOROETHYLENE ('Trilene') has been used as a general analgesic in obstetrics since its reintroduction by Hewer in 1941.[1] Many reports testify to its effectiveness in unselected cases, though most draw attention to the potential danger of overdosage. More because of the limitations of the apparatus then available than because of any defects of the gas itself, the Royal College of Obstetricians and Gynæcologists in 1948 could not recommend it as a safe analgesic for use by unsupervised midwives in domiciliary practice.[2] In 1949 the Medical Research Council appointed a committee on analgesia in midwifery (under the chairmanship of Sir William Gilliatt), which made its first objective the development and testing of apparatus for the administration of trichloroethylene by midwives. The committee's findings, now published,[3] include a recommendation that midwives be allowed to administer trichloroethylene, after adequate instruction with inhalers conforming to a certain specification.

The specification laid down by the committee is strict: the concentrations of trichloroethylene –0·5% per volume of air (with a permissible variation of ±20%), and a weaker concentration of 0·35% per volume of air—must remain constant under all circumstances. Factors especially likely to affect the concentration are rate and depth of respiration, movement of the apparatus, and change in environmental temperature. Laboratory tests showed that many of the inhalers needed readjustment by the manufacturers and re-testing before they conformed to the specification. This suggests that mass production is unlikely to be satisfactory, and underlines the importance of the committee's next recommendation: that each inhaler be tested in an independent and officially approved laboratory before it is put into service. Periodic checking is also recommended, though during the eighteen months of clinical trials all inhalers continued to function satisfactorily; any slight changes in the concentration of vapour delivered were within the permitted limits. (Dr. Austin and Dr. Burns[4] have lately described in these columns a cheap and reasonably accurate device for checking concentrations.)

These clinical trials, which tested the specification and not any particular inhaler, showed that trichloroethylene is as safe as gas and air, which has hitherto been administered by midwives, and more (though not much more) effective. This assessment of its effectiveness is disappointing, in the light of previous reports; but it may partly be accounted for by the high standard of administration of gas and air by the midwives. Combined with pethidine, trichloroethylene gave greater analgesia; but this combination tended to prolong labour and to depress respiration in the child. These two effects did not give rise to any increase in stillbirths or infant deaths within twenty-four hours, nor did they enhance the risk of uterine inertia or hæmorrhage.

These findings confirm that trichloroethylene in concentrations of 0·5% per volume is safe and effective in obstetrics, and they fully establish that a simple and foolproof device can be produced which will deliver a suitable and relatively constant concentration of vapour under all conditions. Rather surprisingly, the report does not refer to the average time for which trichloroethylene was inhaled, nor is the risk of cumulation in prolonged labour specifically mentioned. Cumulation, which is the greatest danger of trichloroethylene inhalation, can be prevented only by intelligent administration. One question has yet to be answered: Will midwives use trichloroethylene when inhalers become available? Surveys show that deplorably many patients, particularly if delivered at home, are not offered any form of analgesia even when this is available.

1. Hewer, C. L. *Brit. med. J.* 1941, i, 924.
2. Royal College of Obstetricians and Gynæcologists: Nineteenth Annual Report, for the Year 1947.
3. Medical Research Council, memorandum no. 30. The Use of Trilene by Midwives. By the committee on Analgesia in Midwifery. H.M. Stationery Office. Pp. 34. 2s.
4. Austin, I. G., Burns, T. H. S. *Lancet*, Oct. 9, 1954, p. 738.

SUPERIOR VENA CAVAL SYNDROME

PARTIAL or complete occlusion of the superior vena cava causes a pronounced increase of pressure in the veins of the head and neck, and is associated with the development of a widespread collateral pathway by which blood from the upper half of the body is returned to the azygos vein or inferior vena cava.[1] The lesion may give rise to no symptoms, and in some cases patients have survived for thirty or forty years. More commonly the disorder causing the occlusion is progressive and incurable; and this, rather than the venous lesion, leads to death. Schechter[2] found that in 18 of his 22 cases of occlusion of the superior vena cava the cause was carcinoma of the lung—particularly of the right main stem or upper-lobe bronchus. Ehrlich et al.,[3] in a larger series of 220 cases, found intrathoracic tumours in 41%. Apparently by far the commonest cause is external compression—from a tumour in roughly half the cases and from an aortic aneurysm in a quarter. The remainder are mostly due to phlebitis or involvement by mediastinitis.

These patients may need treatment for persistent cyanosis and swelling of the face, dyspnœa, and headache. Ochsner and Dixon[4] found that in 1 case some improvement ensued after severance of constricting fibrous bands encircling the superior vena cava. Gray and Skinner[5] operated on 3 patients with 1 death; and although the venous pressure in the arm veins remained unchanged after division of the constricting fibrous bands, subjectively the patients were improved. Andersen et al.[6] report a further 3 cases of superior caval occlusion, 1 of which is of peculiar interest.

The patient was a girl, aged 9, who since the age of 2 had had a thick neck and big head. The abnormal venous pathways so characteristic of a superior vena caval syndrome were displayed by venography and shown to be due to stenosis of the superior vena cava. The child's face was puffy and congested; and she had an enormously enlarged skull, which was well shaped and not hydrocephalic. Angiocardiography showed good filling in the innominate vein and the uppermost portion of the superior vena cava, but from that point the contrast medium passed through a broad vein into the azygos vein and turned into the inferior vena cava.

Thoracotomy revealed that the superior vena cava was fibrosed and obliterated below the entrance of the azygos vein. In order to improve the efficiency of the venous pathway part of the azygos vein was anastomosed to the auricle. Within a month the pressure in the large veins, which had been abnormally high, was normal; and although the subcutaneous veins were conspicuous they were collapsed. Even more striking was the change in the appearance of the face and neck (convincingly revealed in photographs), which changed from bloated and puffy to normal. When the child was seen two years later the skull circumference was unchanged, although she had grown greatly in stature; and the subcutaneous veins had disappeared.

Andersen et al. suggest that the superior vena caval lesion in this patient was congenital, and that the high pressure and stasis in the superior vena caval collection area led to the local giant growth of the skull and facial bones, as in the disturbances that have been noted in cases of arteriovenous aneurysm. Anderson et al. found that angiocardiography outlined the lesion much more

1. See *Lancet*, 1954, i, 611.
2. Schechter, M. M. *Amer. J. med. Sci.* 1954, **227**, 46.
3. Ehrlich, W., Ballon, H. C., Graham, E. A. *J. thorac. Surg.* 1934, **3**, 352.
4. Ochsner, A., Dixon, J. L. Ibid, 1936, **5**, 641.
5. Gray, H. K., Skinner, I. C. *Surg. Gynec. Obstet.* 1941, **72**, 923.
6. Andersen A. H., Hansen, A. T., Husfeldt, E., Pedersen, A., Thomsen, G. *Acta med. scand.* 1954, **150**, 81.

clearly than phlebography.[7] Finally, these workers have clearly shown that surgery has much to offer in cases of superior vena caval occlusion where the underlying cause is non-progressive and the symptoms are disabling.

TREATMENT OF PYLORIC STENOSIS

THE results of medical treatment in chronic peptic ulceration give us no cause for self-congratulation. Relapse-rates are very high; and such treatment is doomed to failure in cases of pyloric stenosis, hour-glass deformity of the stomach, giant ulcers, and deeply penetrating ulcers.

With regard to pyloric stenosis, it has been said that three factors are operating—namely, spasm, œdema, and fibrosis—and that, of these, spasm and œdema can be relieved medically. This may be so; but unfortunately benefits are short-lived, and many believe that relapse is inevitable. Now Kramer [8] has found radiographically that the administration of belladonna alkaloids may worsen rather than relieve benign pyloric stenosis; for this drug further slowed the passage of barium from the stomach. Probably this is due to the coincident decrease in gastric motility, which may also account partly for the relief of symptoms.

Thus it seems that in patients with peptic ulcer and pyloric stenosis medical treatment may be positively harmful. It is therefore important to decide certainly whether pyloric stenosis is present. There is no better test than the time-honoured one of giving the patient charcoal biscuits last thing at night, and in the morning aspirating the resting gastric juice. If this contains charcoal, it is probably best to call in a surgeon.

THE DISORDERED SMALL BOWEL

IT is an appalling commentary on our capacity as healers that the consultant investigating the case of a patient with abdominal symptoms is usually relieved and delighted to find a sufficient organic cause. Treatment then follows diagnosis in orderly sequence, and the encounter leaves him with a satisfying sense of completeness. Nothing disturbs him more than failure to find a clear reason for abdominal discomfort: a haunting suspicion that organic disease is being overlooked urges him on to a succession of time-consuming and expensive investigations; and all too often these leave him with a feeling of hopelessness and uncertainty which readily transmits itself to his unhappy patient.

It is, of course, well known that the effect of mind over matter is nowhere more evident that in the gastro-intestinal tract. The reactions of the distal bowel to dramatic happenings must have been experienced by almost everyone. But the disordered workings of the small gut are less clearly and less widely understood. In recent years studies have been made of the abnormal barium patterns in the small gut, but usually only in the presence of arresting symptoms due to steatorrhœa or some other nutritional deficiency [9] after gastrectomy.[10 11]

Dr. Falle and her colleagues,[12] in continuance of work reported two years ago,[13] have now described significant radiographic findings in a group of patients who were believed to have what they call "chronic disturbances of small and large bowel function." Some abnormality was evident in almost half the patients who were examined radiographically, although the deviation from normal was very slight in half of these. The commonest disorder was clumping of the barium, which was best seen in a film taken at $1^1/_2$ hours; changes in tone of the ileum or jejunum, and signs of accelerated passage of the meal, were also evident. That such radiographic findings were probably significant was suggested by complete failure to demonstrate them in patients who had no symptoms. Falle et al. suggest that all of these radiographic changes can reasonably be attributed to psychological tension, the existence of which was established without difficulty in most of their cases.

It is highly likely that, when the function of the large intestine is disturbed, upper abdominal symptoms are due to a similar disorder in the jejunum and ileum. But even if we learn confidently to interpret the radiographic changes, the diagnosis of intestinal dysfunction must remain a clinical one, to be made only after careful exclusion of other causes. Patient and careful investigation of the history is essential not only to diagnosis but also to the first stage in therapy, in which reassurance is more valuable than medication.[14]

We are all so conscious of the frequency of "functional" abdominal symptoms that we should not be surprised that Dr. Falle and her colleagues put a third of all the new cases at their gastric unit in this category. But we should take note that by diligent and patient management they achieved complete remission of symptoms in well over half of their patients, and considerable improvement in another quarter.

CONTROL OF RATS AND MICE

STANDARD methods of rat and mouse destruction, devised during the 1939–45 war,[15] were largely based on work at the Oxford Bureau of Animal Population, a full account of which has now appeared.[16] The species studied were the common "brown" rat of Europe, *Rattus norvegicus* Berkenhout; the even less appropriately named "black" rat, *R. rattus* L.; and the house mouse, *Mus musculus* L. The magnitude and difficulty of the research on these species can now be appreciated. The conditions in which these rodents live are exceedingly diverse; their habits make them most elusive (no doubt this is a result of natural selection in man-made environments); and control methods must be both simple and economical.

The Oxford work was based on extensive observation of behaviour and population changes in natural conditions. The common rat was found to develop, in a stable environment, regular movements on well-defined pathways. The appearance of an unfamiliar object, such as a trap or a pile of bait, leads to avoidance of the place where this has been put. But familiarity breeds contempt: the regular placing of harmless bait over several days leads to acceptance of the bait even when poison is eventually added. This familiar "prebaiting" obviates the remarkable tendency of this species to refuse foods which have previously caused illness—for example, poison bait of which only a small sample has been taken. The other species of this genus, *R. rattus*, has been less closely studied, but it behaves in a generally similar way. The house mouse does not develop specific poison shyness; but its behaviour is so variable from day to day that it is at least as difficult to poison.

The important work on feeding behaviour was paralleled by studies of the effects of poisons. Toxicological studies showed that the old standby poisons—barium carbonate and red squill—have rather low toxicities. Red squill may be quite ineffective, unless the consignment is carefully selected. Today, the main strong poisons of choice are zinc phosphide, arsenic, and antu (alphanaphthylthiourea)—all after prebaiting—but antu is unsuitable for use against *R. rattus*. The Oxford workers are properly sceptical of the value of '1080' (sodium monofluoroacetate) despite the enthusiasm with which it was first received, especially in the U.S.A.: it is exceed-

7. Katz, S., Hussey, H. H., Veal, J. R. *Amer. J. med. Sci.* 1947, **214**, 7.
8. Kramer, P. *New Engl. J. Med.* 1954, **251**, 600.
9. Golden, R. Radiological Examination of the Small Intestine. Philadelphia, 1945.
10. Glazebrook, A. J. *Lancet*, 1952, i, 895.
11. Macphee, I. W. *Ibid*, 1953, i, 678.
12. Falle, E. De C., Gill, A. M., Post, H. W. A. *Postgrad. med. J.* 1954, **30**, 532.
13. Gill, A. M., Falle, E. de C. *Lancet*, 1952, ii, 356.
14. Hayes, D. W. *Amer. Practit.* 1954, **5**, 787.
15. See *Lancet*, 1951, i, 333; *Ibid*, 1952, i, 913.
16. Control of Rats and Mice. Vols. and 2: 1 Rats. Edited by DENNIS CHITTY. Vol. 3: House Mice. Edited by H. N. SOUTHERN. London: Oxford University Press. Pp. 532 (1 and 2) and 225. £5 5s. a set.

ingly dangerous to man and domestic animals, and it is not a reliable means of dispensing with prebaiting. The latest type of poison—the anticoagulants—of which 'Warfarin' (a coumarin derivative) is the best known, have also been enthusiastically received. The Oxford workers did not work on these substances, but they rightly caution against uncritical optimism.

It is unfortunate that the best recent review of rat-control methods—that of Pollitzer in his great work on plague[17]—should have appeared before the Oxford volumes. As it is, study of both together makes it clear that two major problems require immediate further research. One is the effectiveness and scope of the anticoagulant poisons. The other is the economics of control: what is the most effective way of distributing a given labour force in given conditions of infestation, and what is the effect on the pest populations of given techniques of control? The Oxford volumes provide an excellent basis for developments on these lines.

"A GENERAL EDUCATION"

MANY of us think it wrong that, because a boy is going to be a doctor, he should be obliged, from the age of 15 or 16, to confine himself to science. Recognising the need in medicine for people of wide outlook, we deplore such early specialisation and insist that the soundest basis for medical training is what we call—sometimes a little vaguely—a good general education. To those who say that the future doctor cannot spare time for sixth-form classics we reply with the impatience this argument deserves, and we commend those medical schools which welcome students who have so far given little thought to physics, chemistry, and biology. Nevertheless it would be a mistake not to give full weight to the opinions of those educationists who say that early specialisation in science is by no means necessarily a bad thing.

This view is persuasively advanced by Professor Castle, of the University of Hull, in his *People at School*.[18] The demand for a general education, he says, usually implies the elementary study of many subjects—with or without some attempt to relate them. But the true object of a general education is less to acquire much general information than to create attitudes of mind quick to realise the significance of phenomena in our environment: moreover, a merely superficial study of subjects in which the student is profoundly interested can be a frustrating experience at an age when intellectual satisfaction is important.

"If we recognise that one of the characteristics of later adolescence is a higher differentiation of skills and interests, we shall be on the way to solving this specialisation problem. For we shall realise that our 'general education' must be unforced growth of general interest out of the special interest that occupies the boy's primary effort and concern. And if we also realise that all knowledge has sprouts, that most branches of learning have some reference to other branches, then we can see how to use special knowledge as a core in which a general education may grow its roots. All will depend on the teacher, of course. But he is a poor teacher of science who cannot stretch his pupils' minds across the physical cosmos into the realm of man's spiritual, economic and social needs, and he is a limited teacher of history or geography who neglects the story of the impact of science on human and political development."

The "humane" studies, Professor Castle points out, can be approached with inhumanity almost as easily as scientific studies, and often are. In the modern world, he thinks, the scientist has in many ways a better chance of becoming truly cultured than the arts student; for, whereas much of the world of science must remain a closed book to the historian or student of literature, the scientist is not precluded from closer acquaintance with the best literature and the best thought of the ages. "I have a suspicion that the scientist with an amateur interest in literature and the arts may be the ideally educated man of the modern age." It is now, he says, generally agreed that the liberal aristocratic ideal that has until recently informed the teaching of our grammar schools and public schools was in fact and in its time a vocational education: "it was for careers in church and state that the élite were to be trained by an education that until the nineteenth century most effectively assisted them to govern." The task of headmasters now is to see that the values derived from literary culture are applied to the social techniques of a scientific age, and that scientific knowledge is informed by the perspective given by historical and literary insights.

"It is the isolation of what should be related aspects of knowledge that makes any branch of study purely technical and therefore illiberal. The classical scholar who trains classical scholars is indulging in a vocational activity just as much as his less respected colleague in the technical college. Indeed, there is good reason for A. N. Whitehead's gibe that 'of all types of men today existing, the classical scholars are most remote from the Greeks of Periclean times.' For the Athenians were free from any necessity to study dead languages; it was not special knowledge of the past but their amazing capacity to make use of the present that is peculiarly Greek and that captures our imagination . . . . To think we are copying the Greeks by teaching the Greek language, or to isolate classical and literary studies as the *best* kind of education, is a thoroughly un-Greek thing to do.

"If we want to be like the Greeks, we have to ask ourselves how we can live well in our own age. And as our own times are a product not only of cultural and moral traditions, but also of vastly complex social and economic forces and scientific techniques, a liberal education, a Greek education, is one which takes account of them all. This is one reason why there need be no conflict between the ideals of a liberal and a vocational education. Nothing will be more disruptive of our social life than to separate types of education into superior and inferior grades . . . to designate as 'cultured' those whose minds take note only of 'eternal' values entirely dissociated from the ordinary lives of men and women."

There is nothing fundamentally illiberal in technical education: like all types of education the technical can be narrowly conceived or liberally conceived.

Professor Castle's opinions on this and related subjects deserve closer attention than this summary permits; and his short book could be read with advantage as well as enjoyment by a great many people who are interested in public schools, whether as parents or prospective parents or as governors. Though he does not say so, the school he is describing is Leighton Park, where he was headmaster from 1928 to 1947: and at this Quaker school he had opportunities for experiment and thinking afresh which were unusual. He can make his readers think about education because he himself has really thought about it and because he says clearly what he thinks.

17. Pollitzer, R. Plague. W.H.O. Monograph Series, no. 22. Geneva, 1954.

18. People at School. By E. B. CASTLE, M.A., professor of education in the University of Hull. London: Heinemann. 1953. Pp. 180. 10*s*. 6*d*.

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Public Health

TUBERCULIN-SENSITIVITY IN THE LONDON AREA

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THE purpose of this paper is to report the results of a small tuberculin-testing survey among school-children and tuberculosis patients in the London area. The survey was one of a series carried out with the same technique by the W.H.O. Tuberculosis Research Office for the purposes of obtaining comparable quantitative data on tuberculin-sensitivity from various parts of the world.

Material and Methods

Because the intradermal test with a dose of 5 T.U. has been found to be most efficient in many countries for separating persons presumably infected with tuberculosis from those not infected, it was the test principally used in the present survey. In addition, some of the groups of children and some of the tuberculosis patients were tested with 1 T.U., a common first-dose test; and some with 100 T.U., a common final-dose test. Results with each dose of tuberculin are given as a frequency distribution of measured reaction size, a simple and effective tool for studying tuberculin-sensitivity.

Arrangements were made through the London County Council and other local authorities to test the children enrolled in six schools in Fulham: two schools for infants (5–6 years); two for juniors (7–10 years); and a secondary boys' school and a secondary girls' school (11–14 years). A form letter was sent to the parents requesting permission for the children to be tested, and only those with written consent were included in the survey. Arrangements were also made to test the patients undergoing treatment for tuberculosis in two hospitals: Colindale Hospital in London and Harefield Hospital in Middlesex. Volunteers were called for at Colindale; while at Harefield all patients, though free to refuse, were more or less expected to participate.

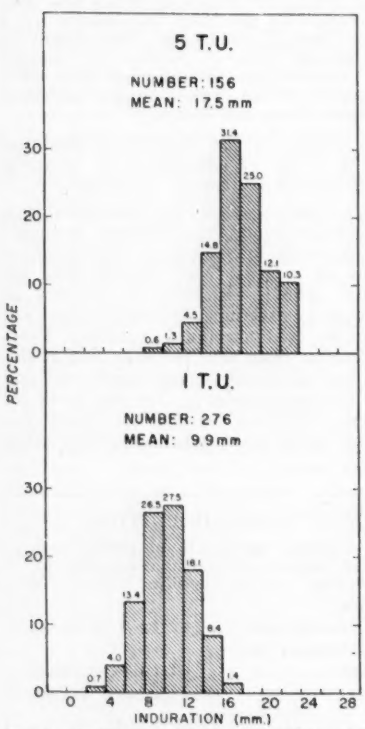

Fig. 1—Distributions by size of reactions to 5 T.U. and 1 T.U. among tuberculosis patients.

A two-dose series of tests was used in the schools. In all but one school 5 T.U. was given as the first dose followed by 100 T.U. in children with reactions measuring less than 8 mm. of induration. In the secondary girls' school the first dose was 1 T.U. followed by 5 T.U. in those with reactions less than 8 mm. Out of a total of 2461 children enrolled in the six schools when the survey was made in November, 1953, first-dose tests were completed in 1799 (73%). (Parental permission for the test was not granted for 243 (10%) of the children, and 419 (17%) were absent on either the testing or reading day or both.) Of the 1630 children eligible (by definition) for the second dose, tests were given and read in 1495 (93%). The large number of absentees during the testing period was, according to the school authorities, due to a temporarily high frequency of upper respiratory infections.

Patients in the tuberculosis hospitals (all adults) were given only one tuberculin test. The 114 (out of about 300) who volunteered at Colindale were tested with 1 T.U. At Harefield 318 (out of about 330) were tested with either 1 T.U. or 5 T.U., the dose for each person being decided by reference to a table of random numbers.

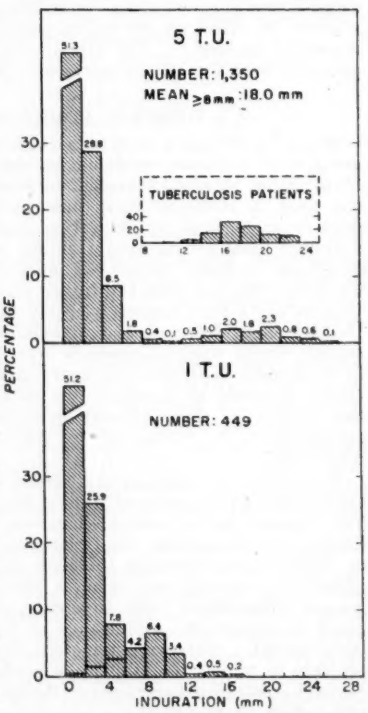

Fig. 2—Distributions by size of reactions to 5 T.U. and 1 T.U. among school-children.

The vertical scale in the insert has been adjusted so that the distribution has the same area as the segment of the distribution of children with reactions of 8 mm. or more.

The tuberculin used was P.P.D. from the State Serum Institute, Copenhagen, identified as RT XIX-XX-XXI and prepared to contain 0·00002 mg. of powdered substance per T.U. The tests were made by injecting 0·1 ml. of dilution into the most superficial layer of skin on the forearm; the volume was gauged by calibrations on the barrel of syringes that had been pre-tested for leakage (Guld and Rud 1953). The first dose was routinely given in the mid-dorsal surface of the left forearm, the second dose in the corresponding site on the right forearm. The transverse diameter of palpable induration was measured and recorded seventy-two hours after injection of the tuberculin; the reactions were not interpreted as positive or negative by the field team.

The field work was done by a W.H.O. Tuberculosis Research Office team: Birthe Johansen (the team leader) and Minna Madsen. Miss Johansen has read tuberculin reactions for T.R.O. studies in various countries, including India, Iceland, Egypt, Pakistan, and Denmark; she read the reactions in the present survey

and gave the first-dose injections. The second-dose injections were given by Miss Madsen.

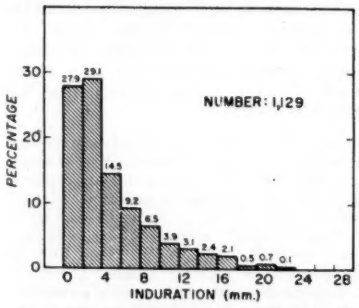

Fig. 3—Distribution by size of reactions to 100 T.U. among school-children reacting with less than 8 mm. to 5 T.U.

Results

Tuberculin-test results are first presented for the patients, a group of persons almost all of whom undoubtedly have been infected. Histograms in fig. 1 show the frequencies, by size, of reactions to 5 T.U. in the upper section and to 1 T.U. in the lower section. (Distributions of 1 T.U. reactions for Colindale and Harefield patients are so nearly alike that the two are here combined.)

Every patient tested with 5 T.U. had a definite reaction to this dose. The distribution of reactions for the group is fairly symmetrical, tapering off on either side of a central peak. In shape it resembles a normal distribution. The reactions average 17·5 mm. in diameter; a few measure as much as 23 mm., none less than 8 mm.

When the dose is reduced to 1 T.U. the whole distribution simply slides to the left on the scale toward smaller reactions, its "normal" shape remaining unchanged. Again, every patient had a measurable response but the reactions now range from 17 mm. down to 3 mm. and average only 9·9 mm. in diameter.

Results of testing school-children with either 5 T.U. or 1 T.U. as the first-dose tuberculin test are shown in fig. 2.

The 5 T.U. reactions fall into two groups. Reactions measuring more than 11 mm. evidently belong to one group, those measuring less than 8 mm. to another group. Reactions 8–11 mm. in diameter are in the range where the two groups overlap and therefore represent a mixture; but these are few and may, for most purposes, be arbitrarily classified with either of the two main groups. It will be noted that the distribution of the large reactions is very like that found for persons known to be infected—the tuberculosis patients, as shown by the insert. Both distributions are fairly symmetrical, roughly "normal" in shape; they also have about the same position on the size scale, the average reaction measuring about 17–18 mm. in diameter.

Two groups are not clearly separated when 1 T.U. is given as a first-dose test to school-children, as is shown by the distribution in the lower section of fig. 2. With this weaker dose, the highly sensitive children (like the tuberculosis patients) have smaller reactions: the group as a whole has simply moved to the left and become telescoped into the other (negative) group on the left-hand end of the scale. That a distinguishable group of highly sensitive children exists, however, may be demonstrated by the reactions obtained when 5 T.U. is given as a second-dose test to those who react with less than 8 mm. to the 1 T.U. test. The area under the horizontal lines in the first three columns of the figure, together with the remaining columns toward the right, outlines this group of highly sensitive children, those who react with 8 or more mm. to either 1 or 5 T.U.

The 100 T.U. test was given only to children who had reactions measuring less than 8 mm. to 5 T.U.—the group who, according to the 5 T.U. distribution, would ordinarily be regarded as negative. As is shown in fig. 3, many of the children still have little or no reaction, and the frequencies gradually taper off with increasing reaction size. The shape of the distribution shows that the 100 T.U. test does not bring out a group of reactions identifiable as such and distinguishable from the remainder of the reactions. It would indeed be difficult on the basis of the distribution shown in fig. 3 to justify calling some of the reactions "positive" and others "negative."

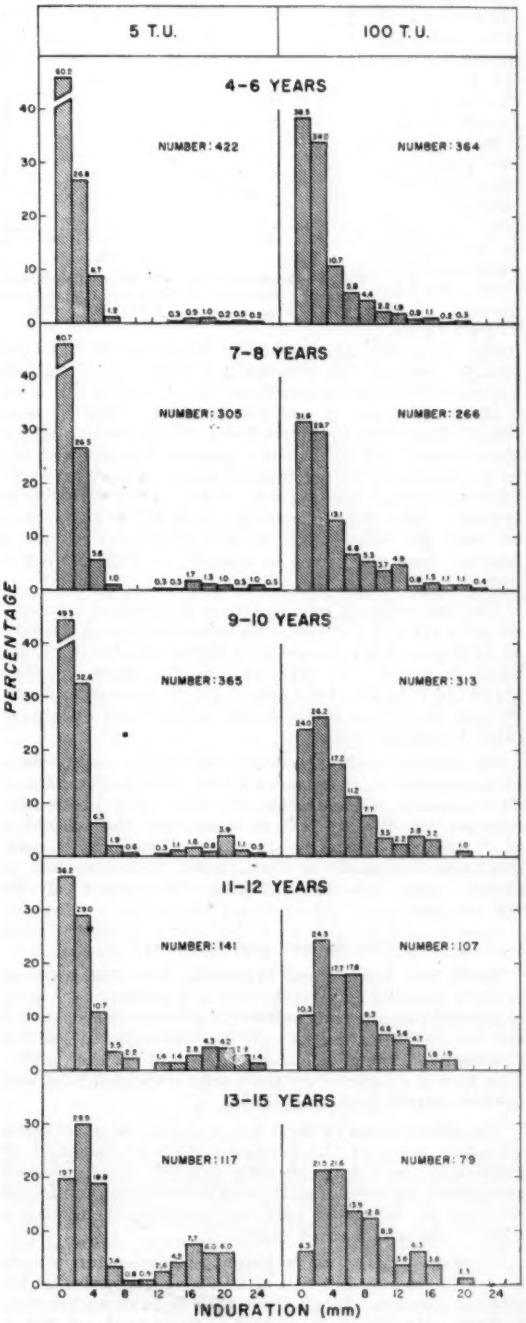

Fig. 4—Distributions by size of reactions to 5 T.U. and 100 T.U. among school-children in five age-groups. (100 T.U. given only to children reacting with less than 8 mm. to 5 T.U.)

The 5 T.U. and 100 T.U. test results are given in fig. 4 according to the age of the school-children. The distributions of 5 T.U. reactions show the same feature at all ages: a persistent area of low frequency in the 8–11 mm. range clearly separating the one group from the other. With increasing age the frequency in the left-hand group goes down while the frequency in the right-hand group goes up, as would be expected if the two groups represent the infected and uninfected; children appear to transfer across from one group to the other without lingering in an indeterminate zone between them. The 100 T.U. distributions (for children with less than 8 mm. to 5 T.U.) show a gradual increase with age in the frequency of reactions of small to moderate size. Children apparently become a bit more sensitive to 100 T.U.—they seem to slide up a little on the size scale—as they get older; but it is not possible to see a transfer from one group to another as with the 5 T.U. test.

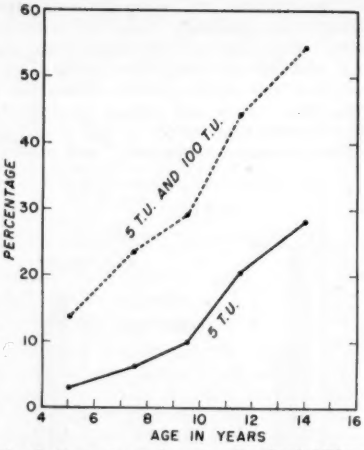

Fig. 5—Percentages by age of school-children reacting with 8 mm. or more to 5 T.U. and with 8 mm. or more to either 5 T.U. or 100 T.U.

The frequency of infection as a function of age—and we have taken 5 T.U. reactions measuring 8 mm. or more as evidence of infection—is as shown by the solid-line curve in fig. 5. As expected, the frequency increases gradually with age, from about 3% at 5 years to nearly 30% at 14. This is certainly low as compared with many other European cities.

The effect of adding results of the 100 T.U. test to those obtained with 5 T.U. is shown by the broken line in fig. 5. For purposes of illustration, we have used the 8 mm. criterion for 100 T.U. It is clear that the frequency of "positives" among the school-children is substantially increased—in fact, more than doubled at nearly every age—by including the results of the 100 T.U. test.

Conclusions and Summary

The 5 T.U. intradermal tuberculin test would appear to be a suitable single-dose test in England, as it is in many other countries, for identifying tuberculosis patients and for discriminating two groups—the infected and the uninfected—among school-children and young adults. This view is supported by the results presented here, and in other papers (see *Lancet* 1954).

The effectiveness of the 1 T.U. test may be questioned. Although most of the persons ordinarily classified as positive by the test are probably infected, those classified as negative represent a mixture of infected and uninfected who can be separated only by re-testing them with a slightly stronger dose of tuberculin.

There would seem to be little justification for using a dose as strong as 100 T.U. in screening a population for infected persons. When those with little or no reaction to 5 T.U. (the persons we regard as uninfected) are tested with 100 T.U., the results fail to bring out a distinguishable group that could be called "positive." Admittedly a few of the persons with large reactions to 100 T.U. may be infected but were missed by the 5 T.U. test—but their reactions do not enable them to be distinguished from the uninfected. In our opinion, recent studies show that almost all of the reactions to this strong dose are "non-specific" for tuberculous infection—that is, they represent a low-grade kind of tuberculin-sensitivity that has nothing to do with tuberculosis.

The W.H.O. Tuberculosis Research Office deeply appreciates the opportunity for working with the South West London Mass X-Ray Service in the tuberculin-testing survey reported here. It also acknowledges the cordial coöperation, through that service, of Dr. H. C. Price, of the Fulham Chest Clinic; Dr. J. A. Scott, Dr. Violet Russell, and Dr. R. H. Simpson, of the London County Council; Dr. W. E. Snell and his staff at Colindale Hospital; Dr. K. R. Stokes, Dr. L. E. Houghton, and Dr. Eugene Nassau, of Harefield Hospital; and Miss Vera Farrow and Miss Joyce Strudwick and other members of the staff of the South West London Mass X-Ray Service.

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Lancet (1954) Leading article, i, 244.

Vaccination against Tuberculosis

The W.H.O. Expert Committee on Tuberculosis [1] is convinced by the evidence that specific resistance to tuberculosis can be induced by vaccination. It recommends that a single Mantoux test with 5 T.U. of purified protein derivative (P.P.D.) should be used in mass-vaccination programmes, and that a tuberculin reactor should be arbitrarily defined as one with induration of 5 mm. or more in diameter at the end of three days. The results of sample surveys of the level of allergy obtained should be expressed as frequency distributions of the diameter of induration. The committee strongly recommends that a single large batch of P.P.D. be prepared and made internationally available for Mantoux testing. Oral vaccination is not at present advised, but it should be further investigated. For specially exposed groups the committee considers that vaccination should be controlled by a tuberculin test two to three months after vaccination and periodically thereafter, the non-reactors being re-vaccinated. For mass campaigns only re-testing of sample groups is required. The organisation of large B.C.G. vaccination campaigns should not be left to tuberculosis centres but should be coördinated centrally or regionally and made part of the general public-health programme.

The Health Visitor and the Family

In his report for 1953 Dr. E. D. Irvine, medical officer of health for Exeter, discusses the health visitor's rôle in easing the difficulties of family conflicts—a question which was the subject of a recent Ministry of Health circular.[2] Dr. Irvine advises caution, and he is uneasy lest any group of social workers should come "to regard themselves as mentors of the family." When there are signs of failure which adversely affect children and neighbours, the health visitor should "so to speak, invite the mother's request for help"; but, Dr. Irvine continues, "she must beware of infringing the right and duty of the family to manage its own affairs and intervention too early must be discouraged. 'Support' must at all times be the watchword of the health visitor, but it should be constructive, based on the ultimate need to re-establish in the family the will to betterment . . . respecting always the personality of the parents, however backward, stupid, lazy or indifferent they may be: only if malice is undoubted, should the 'heavy hand' be used, and it is more than a little doubtful if the health visitor is the right person to engage in that particular kind of reformative effort."

1. Sixth Report of the Expert Committee on Tuberculosis. *Tech. Rep. Wld Hlth Org.* 1954, no. 88. H.M. Stationery Office. Pp. 10. 1s. 9d.
2. See *Lancet*, Dec. 11, 1954, p. 1226.

Special Articles

DELINQUENCY AND CRIME
A CHALLENGE TO PSYCHIATRY

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ONE of the most difficult problems facing society today is that of delinquency and crime. There is an almost universal desire to prevent crime, but there is as yet no general agreement how best to deal with antisocial behaviour once it has been established. Society attempts to protect itself from its antisocial elements by segregating them for varying periods in prisons and institutions. No-one believes that such measures substantially lessen the incidence of crime. How can psychiatry make a useful contribution in this field? Much has already been done, particularly with children, and the development of child-guidance clinics is perhaps the best example of an attempt at prevention.

Uneasy Patients

Where the law has been invoked, the work of probation officers, approved schools, and borstals are all forms of treatment designed to bring the young delinquent back into society. The picture is less promising when one looks at the problem of the antisocial adult. People of this kind are usually loosely designated as psychopaths, and the very term has come to reflect some of the hostility felt for them even by psychiatrists. It is often jokingly said that a psychiatrist tends to label as psychopaths whatever patients he does not like. Part of this attitude stems from the doctor's feeling of helplessness in dealing with them. No definition has been accepted by psychiatrists as a whole and the term psychopath continues to be used more than any other.

The ætiology of psychopathic states may be controversial, but they fall into a fairly constant pattern.

There is an early history of a disturbed home where the child has felt unwanted, or, less often, the child has had no home at all and an orphanage or foster-parent upbringing. The school record, though often satisfactory from the scholastic standpoint, is marred by inability to join in social activities with the other children or by antisocial activities, either in isolation or with gangs of other delinquents. Thereafter follows the familiar picture of inability to settle in a job for any length of time, a poor level of accomplishment as judged by skill, and frequent unemployment often ending in a parasitic existence on the National Assistance Board. An unsatisfactory marriage and unwanted children all too often suggests that the pattern may repeat itself in at least some of the children of the next generation.

Men and women of this type often refuse to accept the fact that they are ill. It might indeed be said that the successful psychopath is a common figure in our society; he may be recognised in certain successful business men and those who achieve power in some political or other organisation. There seems to be a tendency for psychopaths to be found either near the top or near the bottom in our social hierarchy. The unsuccessful psychopaths usually drift into petty crime or into jobs of an unorganised kind, such as the activities carried out by "spivs."

Many people believe that the condition is genetically or organically determined—that it may result from bad stock, birth injury, or follow an infection such as encephalitis lethargica. Others hold that, though such factors may be important in a small percentage of cases and may contribute in others, the major cause lies in personality development. Most psychopaths, they point out, have grown up in unfavourable homes and have usually been rejected or unwanted as children. Whatever the cause, psychiatry cannot escape the challenge that these problems create.

In this country the adult psychopath is dealt with in a vague and indecisive way, because no-one is clear what course to take. Many alcoholics, sex deviants, drug addicts, prostitutes, and people with inadequate and aggressive antisocial behaviour disorders fall into this group. In general they will merely be observed or given little more than counselling therapy in a hospital out-patient department. In a severe case there is little choice but to admit such cases to a mental hospital. If the patient has come into conflict with the law, he may be put on probation on condition that he obtains psychiatric treatment. With most patients, this coercion is ineffective: they do not really want treatment, and they either fail to keep an appointment or never seek psychiatric advice at all. The latter group is for obvious reasons little studied or understood. Those patients who do consent to inpatient treatment or are sent for treatment by a court order show poor results in a conventional mental hospital.

The psychopath seems to need a different therapeutic environment from the psychotic or even the person with a severe neurosis. He usually shows the impulsiveness, lack of self-discipline, inability to postpone gratification, absence of social consciousness, and egocentricity of a child of $2^1/_2$ years. He is unable to make friends, and the doctor or nurse will not be able to make any emotional contact with him. He distrusts society and has little regard for its directives. Above all he cannot tolerate discipline and sees in an authoritarian figure the hated and feared parent figure of his childhood, against whom he has rebelled all his life.

Hospital authorities usually dread the admission of these patients who are the worst trouble-makers and most disruptive elements in mental hospitals. What they really need is treatment in wards or units set aside for this type of case. The social organisation and training of the staff working on these wards would seem to be very different to that required on the other wards of a mental hospital. As far as is known, apart from Belmont, the only units of this kind are in prisons. In the present state of our social development and knowledge probably the best plan would be to increase the facilities for psychiatric treatment in prisons, and also to increase the facilities for the treatment of antisocial character disorders in psychiatric hospitals.

This raises the difficult issue of the unwilling patient. Whether the law should be altered so that chronic alcoholics, aggressive psychopaths, drug addicts, and so on could be compelled to participate in treatment, is still doubtful. A panel of psychiatrists who made such a recommendation to a court would not only be faced by a difficult ethical problem but would also have to consider how far an unwilling patient can benefit by psychiatric treatment. An overriding difficulty in the way of such legislation at present is the absence of adequate facilities for treatment.

The Belmont Experiment

The social rehabilitation unit at Belmont Hospital, started seven years ago, was planned for the treatment of chronic unemployed disabled people who were often severe neurotics or mild psychotics. But, from the start, many psychopaths were admitted; and the need for an active treatment centre for psychopathic patients has led to a gradual transition, until now most of our patients are psychopaths.

The unit of 100 beds for both sexes is housed in a 400-bed psychiatric hospital. It is staffed by 4 psychiatrists, 1 psychiatric social worker, 1 clinical psychologist, 1 social anthropologist, 2 disablement resettlement officers seconded by the Ministry of Labour, 4 workshop

instructors, 3 trained nurses, and 11 social therapists. The social therapists are young women, preferably with some form of social-science training, who work here for about a year before returning to social work.

All problems are discussed at the community meetings of staff and patients which are held for an hour every day. Authority is distributed in the community, and in this way the antisocial behaviour of patients becomes the concern of everyone. Most of the patients have never belonged to a family or any other group before, and in our community they for the first time begin to feel a sense of belonging, and to realise what their behaviour means to the rest of the group. They accept the authority of people like themselves more readily than that of a single authoritarian figure. By doing so, they come to understand that by identification with the group and a willingness to impose self-discipline they can achieve new and more socially acceptable patterns of gratification.

A community such as this encourages personality growth. In it the patient has unusually favourable opportunities to associate with non-punitive figures, including the social therapists or other patients. He can test the possibilities of sharing his troubles, verbally, instead of showing them by rebelliousness or other forms of acting-out. If he finds that he can get more satisfaction through frank and sympathetic communication (friendship and understanding), than by antisocial ways, he may come to adopt this more mature pattern of behaviour. In time he may come to identify himself with the unit and refer to it as "our unit"—a further step in the development of a social conscience. Such a community can come to have great tolerance for the behaviour of its members, but calls for forbearance and understanding on the part of the staff which can only be achieved with the help of special training. The staff can deal with some of their own anxieties by verbalising them in the community meetings and getting help from other staff and patients. In addition, much of the day is spent in small therapeutic groups in which the staff participate. There are also groups for staff only where much-needed support and therapy is available.

Some other Experiments

The term therapeutic community can be used to describe a unit organised in this way. The communities established by Aichhorn and Redl for the treatment of adolescent delinquents, and our experience at Belmont, suggest patients with antisocial character disorders do best in this environment. Sturup claims good results in the treatment of criminal psychopaths at Hersdtvester near Copenhagen,[1] but his use of castration for sexual deviants and of prison restraint for most of the inmates is contrary to one of our basic principles of social psychiatry. The Dutch have started a prison clinic under Professor Baan on permissive lines for patients selected from the prisons as suitable for treatment. They also plan a 100-bed psychopathic unit in a mental hospital, to which cases from the courts may be referred without the disadvantages inherent in treatment within a prison. In the latter unit it is planned to have no prison officers but only nurses or social therapists selected for this work, and they plan to have patients of both sexes—another basic principle in our concept of a therapeutic community. In this country a new treatment centre for criminal psychopaths is being set up by the Home Office.

The relative value of inpatient and outpatient treatment for psychopaths has not yet been adequately studied. The Institute for the Study and Treatment of Delinquency (the Portman Clinic) and the Maudsley Hospital have treated many psychopaths as outpatients, often referred from the courts. Cases also turn up at psychiatric clinics all over the country and present a problem which has not yet been solved by psychiatry.

1. Taylor, S. *Lancet*, 1949, 1, 32.

The Future

Special psychopathic units in mental hospitals would do much to improve this unsatisfactory state of affairs. They would provide more adequate treatment, remove the difficulties caused by these patients in ordinary psychiatric wards, and give psychiatrists an opportunity to put into practice the best methods of treatment. Outpatient treatment and aftercare could be studied by doctors and social workers really interested in the problems of the psychopath.

Much research remains to be done. A start has been made with field studies like the Bristol Social Project which aims "... to establish practical means of tackling those stresses and strains which arise in such a community in the form of delinquency and other disturbance. The main emphasis of the project will be on encouraging local initiative and on getting local residents to take a greater degree of responsibility for their community life." The Belmont Unit is carrying out, with the help of a grant from the Nuffield Foundation, a somewhat similar study designed to explore common factors in the socio-cultural environments within which selected cases of psychopathic personality have developed. It is our hope that these intensive analyses will not only yield ideas to enhance treatment methods for psychopaths but will also contribute to the development of preventive measures within the larger society itself.

I wish to thank Dr. Louis Minski, physician-superintendent of Belmont Hospital, for his continued help and interest in the development of the social rehabilitation unit.

NEW ZEALAND GENERAL ELECTION

FROM OUR NEW ZEALAND CORRESPONDENT

LAST month's general election in New Zealand gave the National Party a renewed term of office with a reduced majority (National 45, Labour 35). The Social Credit League contested every seat, and though it did not secure one it polled 10% of the votes and gained very substantial support in some constituencies. The significance of this has been variously attributed to fear of inflation, rise in cost of living, or simply a feeling of "a plague on both your houses." The National Party has promised an inquiry into financial matters.

There are five new Cabinet ministers, mostly young men. The minister of health is now Mr. Ralph Hanan, a barrister and solicitor from Invercargill, and a former mayor of that city. To him will presumably fall the task of carrying through the reorganisation of the hospital system which has been under discussion for some years.

Medicine and the Law

Hospital Authorities Criticised

AT an inquest [1] at Altrincham, Cheshire, on a woman of 85, her daughter said that her mother, having been given an anæsthetic for the reduction of a fracture, was left for over two hours in a small unheated cubicle. The old lady had been taken to hospital after falling down the cellar steps. Her daughter said that she had been prevented by a ward sister from arranging private transport when it was decided that the patient should go to another hospital. They had then had to wait a further two hours for an ambulance to take her to the other hospital, where a fortnight later she had a cerebral hæmorrhage. Recording a verdict of death from hypostatic pneumonia and cerebral hæmorrhage after an accidental fall, the coroner said that he was surprised that the hospital authorities had ignored his suggestion that they should attend the inquest. Allegations had been made, he said, which he thought should be investigated by the hospital authorities. They had been given the

1. *Manchester Guardian*, Dec. 8, 1954.

opportunity of attending the hearing and cross-examining the witnesses; but since they had taken no action at all they could hardly expect to escape criticism.

Accidental Puncture of Heart

A child of 11, admitted to hospital with a spontaneous pneumothorax, collapsed while air was being removed from the pleural cavity through a chest-aspiration needle. The child recovered sufficiently to be moved to another hospital, but died the day after transfer. The necropsy findings, given at the inquest,[1] showed that the heart had been penetrated. The pathologist said he was satisfied that the needle had been correctly inserted. The probable explanation was that, as the lung expanded, the heart had moved so as to impinge upon the point of the needle. It was unfortunate, he added, that the needle had been sharp-pointed and had been left in position too long.

Irregular Prescribing

Two general practitioners have lately come before medical services committees for issuing irregularly National Health Service prescriptions.

Sheffield executive council, meeting on Dec. 7,[2] recommended that a woman doctor should refund the cost (£43 8*s*.) of prescriptions which she had issued to patients for whose treatment she was not responsible; and that £300 should be withheld from her remuneration. A report by the medical services committee described the doctor's prescribing as "uncontrolled and irresponsible"; she had issued the prescriptions without first finding out whether the patients were on her list, and the committee suspected that this arose from her desire to consolidate her professional position in a district in which she was a comparative newcomer. One patient, said the report, had obtained 72½ lb. of lint and 234 oz. of disinfectant.

A Wiltshire doctor, who issued 2800 prescriptions for drugs which should have been dispensed, will be called on to refund the cost of the prescriptions (£895 17*s*. 2*d*.), and have £250 deducted from his remuneration, if the Minister of Health accepts a recommendation made by the Wiltshire executive council on Dec 8.[3]

Parliament

National Insurance Bill

IN moving the second reading of this Bill in the House of Commons on Dec. 8, Mr. OSBERT PEAKE, Minister of Pensions and National Insurance, said that the work of the Phillips Committee was part of the wider non-statutory review of the National Insurance scheme. A debate on the wider questions would take place after the Christmas recess. It was likely that as a result of the committee's investigation the Government might have to remodel, to some extent at any rate, provisions for widowhood and for other dependants, and probably further legislation would have to be undertaken later. But Mr. Peake himself was sceptical about any gain likely to accrue to the National Insurance Fund by raising the pension age. The recent report made by his department into the reasons why people retire had reinforced this view. He was confident that increased claims by elderly people for sickness and unemployment benefit would virtually—and might wholly—cancel any advantage claimed for such a raising of the age.

Accidents in the Home

In the House of Lords on Dec. 8, Lord CROOK said that home accidents were responsible for some 7000 deaths annually in Great Britain, and perhaps as many as 2 million accidents needing hospital treatment. Every effort had been made, by poster, film, and propaganda, to stir public imagination to deal with accidents on the roads. Might it not be worth while to devote a little of the same attention, and a little money, to trying to take death out of the kitchen and the home? More children under fifteen died from accidents in their homes than were killed on the roads. A survey of the records of some accident hospitals showed an annual home-accident rate of 4% of the population. The cost of the hospital treatment of these cases in 1949 was put at £4–5 million. In view of increased costs the figure was now probably higher. To this expenditure could be added sickness benefits and local-authority expenditure on health visitors, home nurses, and so on. A fatal-accident rate in factories of 2 a day caused concern, but fatal accidents in and about the home came to 24 a day. The *Annual Abstract of Statistics* published last October showed that of the 7000 deaths from accidents over 4000 were due to falls, over 1000 to poisoning, and over 700 to fire or hot substances. Lord Crook suggested that we needed more information based perhaps on health visitors' records, the reports of the district nursing associations, ambulance service records, and evidence from teachers of their experience in schools.

Lord AMULREE endorsed the plea for more propaganda about home accidents. Local authorities should be encouraged to ensure that new houses were as free from potential danger of accidents as possible. One of the alarming features from a medical point of view was the large number of children poisoned accidentally in their homes, apparently because homes were now becoming rather like a chemist's shop. Last year 169 children died from taking poison by mistake. A quarter of them were under five. Fatal accidents among old people appeared to be increasing at a faster rate than the increase in the number of old people themselves. He suggested that the Government chemist might try to discover whether the inflammability of certain articles of clothing could be reduced.

Lord HADEN-GUEST urged that school doctors and nurses should be asked to pay special attention to giving mothers and children instructions about how not to use a fire and what to do in the home.

Lord MANCROFT, parliamentary under-secretary of State to the Home Office, offering further statistics said that from 1940 to 1949 48,000 people died in this country from accidents on the roads; but over 60,000 died from accidents in the home. Last year alone 5895 died from accidents in the home in England and Wales. The victims were mostly the old and the young. Of every 4 victims 1 was under the age of fifteen and 2 were over sixty-five. Legislation could occasionally remove particular causes of accidents; but he thought that on the whole this was not a very fruitful subject for Acts of Parliament. The Heating Appliances (Fireguards) Act, 1952, was now fully in force, and was bringing some improvement, but it had not been in force long enough to show whether any material effect would result from it. But in the last resort it rested with the public to take precautions. The Home Secretary intended to resume the grant of £1500 a year for three years to enable the Royal Society for the Prevention of Accidents to increase the number of home safety committees, expand its lecturing work, and hold occasional regional homes-safety conferences.

QUESTION TIME

Research into Mental Diseases

Mr. KENNETH ROBINSON asked the Minister of Health if he was satisfied with the present organisation of research into mental illness and mental deficiency; and if he would consider the establishment of a separate body charged with the duty of promoting and coördinating such research.—Mr. IAIN MACLEOD replied: The Clinical Research Board recently appointed has the duty of advising and assisting the Medical Research Council in promoting and coördinating clinical research, including research into the treatment of mental illness and mental deficiency. I think these arrangements will prove satisfactory. Mr. ROBINSON: Is it not clear that they have not yet proved satisfactory, because a very small amount of money has been devoted to this kind of research? Is the Minister aware that this country is living on the research done in the United States and in European countries? Does he not think it is about time we made a new start in the matter and that the establishment of a new body might achieve this?—Mr. MACLEOD: That is precisely what we have done. The Clinical Research Board has only just been appointed and has not yet got under way. It is an entirely new development in this field, which I personally think is of first importance.

1. *Yorkshire Post*, Nov. 27, 1954.
2. *Manchester Guardian*, Dec. 8. 1954.
3. *Ibid*, Dec. 9, 1954.

Recruitment of Dentists

Mrs. EVELINE HILL asked the Minister whether he was aware of the shortage of recruits to the dental profession; and whether he would institute some inquiry into the reasons for this state of affairs.—Mr. MACLEOD replied: The British Dental Association have already approached me on the question, and the Secretary of State for Scotland and I have decided to set up an interdepartmental committee to ascertain the reasons for the lack of candidates of suitable quality for training as dentists and to indicate possible directions in which remedies might be sought. We hope to announce the membership of the committee shortly.

N.H.S. Prescriptions

Replying to a question, Miss PATRICIA HORNSBY-SMITH, parliamentary secretary to the Ministry, said that the number of health service prescriptions dispensed in England and Wales for the nine months ended Sept. 30, 1954, was 160,057,142. The numbers for the corresponding periods in 1952 and 1953 were 160,322,768 and 163,553,240 respectively.

Cancer Registration

Mr. N. N. DODDS asked the Minister if he would make a statement showing the results of his circular requesting hospitals to do everything possible to achieve the registration of all cases of cancer.—Mr. MACLEOD replied: The circular asked hospital boards to report on the present state and projected development of cancer registration not later than June 30, 1954. The results have been generally encouraging. A number of hospitals have agreed to take part for the first time, and three more hospital regions have decided to set up central registration bureaux. It will not be possible to assess the increase in cases registered for some time, owing to the need to verify and follow up new registrations.

Christmas in Hospital

Mr. V. J. COLLINS asked the Minister if he was aware that many hospital management committees, which had only kept expenditure within estimates by restricting maintenance of buildings and similar expedients, had no Exchequer funds available to help with Christmas festivities; and if he would provide regional hospital boards with a small fund from which Christmas allowances could be made to hospitals which had insufficient free moneys for this purpose.—Mr. MACLEOD replied: I am aware that many hospital management committees are having difficulty this year in keeping their expenditure within their approved estimates, but this should not prevent the provision of reasonable Christmas festivities which I have advised should, as far as possible, be met out of amenity funds. I have no doubt that regional hospital boards take into account the needs of particular hospitals when allocating their share of the income of the Central Hospital Endowments Fund.

Telecobalt Units

Replying to a question, Mr. MACLEOD said that seven hospitals had already telecobalt units for the treatment of cancer and several more were planned.

Colonial Medical Degrees

Mr. JOHN RANKIN asked the Secretary of State for the Colonies whether he would press for the recognition of medical degrees given by the Makerere College, as a qualification to practise medicine in the United Kingdom and the Colonies.—Mr. H. L. HOPKINSON replied: It is the policy of the Government to encourage the raising of the standard of medical qualifications accorded by university colleges in the Colonies to a level at which they can be recognised by the General Medical Council in the United Kingdom and by Colonial governments generally. Representatives of the council have already visited Makerere on more than one occasion for the purpose of reporting to the council on the standards achieved at the Mulago medical school, and a further such visit can be expected to be made at an appropriate time.

Radio-telephones for Ambulances

Mr. F. F. A. BURDEN asked the Minister to what extent county health departments were making use of radio-telephonic communication in their ambulance services.—Miss HORNSBY-SMITH replied: About a third of those in England and Wales. Radio control has been found to lead to greater efficiency and economy, and, apart from the 20 out of 63 counties and the 42 out of 83 county boroughs, which have installed it, other authorities are considering adopting it.

In England Now

A Running Commentary by Peripatetic Correspondents

THE mountain tops instil a curious detachment from time. From three thousand feet above the cares of the valley I saw the twin chimneys of the atomic pile on the Cumberland coast, and as I looked westwards they faded into a vision of tomorrow in my practice. Tomorrow, or the day after? My name engraved on the surgery door-plate or on some moss-covered headstone? Time will not care.

I saw the scalpel laid aside for the ultrasonic drill as medicine borrowed the tools of dentistry; the stethoscope yield to the scintillometer as the radioactive isotopes became the mainstay of routine diagnosis. The clicking of geiger counters drowned the sigh of the wind through the brackens. The valley below hid a network of co-axial cables, connected in ethically closed circuits by the local executive council, providing colour television phones between my patients and our surgery by the little stone church. An electronic clinical thermometer in each home registered on the panel by my bed. That autumn refresher course in physics had been well worth while.

It was comforting to see in my rucksack pocket the portable two-way television outfit; its tiny germanium transistors made it so much more efficient than the radio valves and clumsy walkie-talkies of the old days. Yet I seemed to remember that peace and quiet could be found on the high tops then. But surely it was all for the greater good? T.V. had brought consultant aid into the bedroom of the remotest farmhouse. Beyond the co-axial cable system lay the microwave relay posts to the medical centres of the world. A flick of the switch, a twist of the dial, and what more could a G.P. ask?

The projection set in the surgery kept me in touch with the patients admitted to hospital. I was fascinated to watch the specialists conducting their atomic and electrical investigations, feeding the answers to the Tridac computer for infallible diagnosis and documentation. I peered with the registrar into the darkest human cavities by electronic light, gauged with him the emission from the cobalt bomb, cheered the concentration of alpha rays in Mrs. Smith's boron-soaked cerebral tumour. Mr. Brown's thyroid ticked with activated iodine. There was a rumour that we should soon have an atomic drugstore in the village for local E.C.10's. The snag about running a dispensing practice was that most of the radioactive material needed to be handled by mirror reflection.

Time slipped another notch. A quick glimpse of Perseus gazing into his polished shield by a foreign shore. Medusa's head was borne away, and her two Gorgon sisters changed back into the twin chimneys by the Irish Sea. The sky above was deepest blue, the valley a patchwork of green and brown. I looked at my watch. Mrs. Smith was due to go away this afternoon for deep X-ray. Mr. Brown needed an E.C.G. My vision was a reality in scattered corners of the world this very day. Tomorrow was just around the corner.

* * *

To a specialist in preventive medicine the problem of Christmas presents consists in more than balancing the price, the suitability, and the packability. Two years ago when I gave my diabetic cousin, May, a box of crystallised fruits, my gift proved more expensive than my initial financial outlay—which at the time I thought bad enough. The fact that I didn't know that diabetics couldn't eat sugar was bandied about among my relations near and far and escaped into the "friend-of-a-friend-of-mine" circle. Last year I sent my Aunt Julia a tin of biscuits. She wrote to say she was sure I didn't mean to poison her, she had always believed that my present to dear May had had no ulterior motive and was merely due to lack of knowledge. But, she continued, since her doctor had found out her blood-pressure, he had forbidden her on pain of death to eat sweet things. With these thoughts in mind I glanced this year at the presents my wife had bought. Sweets for Millie, our godchild—they will rot her teeth. Tin of ham for Uncle Jack—undoubtedly complete with salmonellæ. Bottle of brandy for my parents—will fibrose their livers. For my nephew, aged 10, the *Gun Flash Annual*—probably a horror comic and will be the cause of the child's ultimate delinquency. The cigarettes for my sister and brother—clearly right out.

Seeing despair come over my wife, I asked her what she wanted for Christmas. She brightened and replied "a deposit on a washing-machine." I tried to explain that a sedentary inactive life has been shown to lead to coronary thrombosis, and that the weekly wash is undoubtedly a powerful factor in protecting women from this preponderantly male disease. But women will not acknowledge logic and consistency. Her only reply was "I'll risk it."

* * *

An admirable body of business gentlemen—the Gideons—had given Bibles to each of the patients in our wards. The spiritual needs of the staff were not overlooked and I was given a white-leather-bound copy of the New Testament on which NURSE was printed in letters of gold on the outer cover. I presented it to my 6-year-old son, who announced that tonight's bedtime story must come from "this lovely little book," and the Christmas story from St. Luke was duly read. Afterwards he was turning over the pages, when he gave a great shout of delight: "Look, Daddy, here is a story all about Stanley Matthews." "What?" "Yes, here it is S—— T—— Matthew."

Admittedly he had been conditioned by his soccer diary for 1955, in which the great maestro's photograph appears in glorious technicolour. But not so many years ago, such an utterance from one already 6 would have been regarded as grave sacrilege, reflecting no credit on the parents, especially in a Scottish presbyterian household—and from the Moderator's congregation at that.

* * *

Annotation, THE LANCET, Nov. 15, 2054, p. 1517.

A peripatetic correspondent lately returned from Padua has drawn attention to Antonio's pioneer work in euthymic resynthesis by friginarcosis, and to the potentialities of the method in case-hardening the mind against the shocks, casual or organised, of 21st-century life.[1] In the context of friginarcosis, reference to current research in human refrigeration at Bromwicham University is pertinent, although its aim is experimental rather than therapeutic, and is primarily designed to solve some of the problems connected with lunar colonisation. Student volunteers of either sex, who have been granted exemption from International Service in return, have been chilled to −70°C by a quick-freeze method, and kept in storage for periods up to three years. They have proved completely viable on reheat, the only detectable change being induced germ-cell polyploidy, comparable to that which occurs in animals.[2] No cross-breeding experiments have yet been performed, but it is likely to be a valuable mutation, as the polyploid (so-called "isomeric") litters of freeze-treated rats are strikingly resistant to all forms of cosmic and fission or fusion radiation.[3] In a few cases, desiccation has been combined with low-temperature chilling, and living human corpora reduced to a fine grey-brown tasteless powder of high calorific value. Physical reconstitution has been successfully achieved, but has been invariably attended by an unexpected side-effect. Unlike "ashed" monkeys which are indistinguishable, when revivified, from untreated siblings, the human preparations are recognisably different from normal controls. The most prominent feature is a complex and seemingly lasting affect-bleach, resulting in patterns of behaviour which may be comprehensively termed "soulless." The mechanism of this interesting phenomenon is unknown, though it is perhaps analogous to chemical denaturing. Further research will be aided by the new "Somatransitron," which was officially unveiled in the Department of Anthropological Engineering at Bromwicham last week by the secretary of the European Council on Scientific Methodology. In his speech, he reminded his audience that "only enemies of the People and reactionary deviationists go on chewing the cud of outworn myths and moralities. We must keep our eyes on the horizon of the future, as we march always forward in ranks of graded equality. Tomorrow belongs to him who looks for it." We will do well to remember such brave advice.

1. Lancet, 2054, ii, 713.
2. Nottman, X. B., Bulsher, C. Korg, J. McC. *Panamer. J. Phoniatrics, 2049, 65, 501.*
3. Smooke, L. W., Warsnip, P. *Astrophys. Med., Lond.* 2053, **24**, 13.

Letters to the Editor

A PERSONAL CARD FOR INSULIN DIABETICS

SIR,—Sir Harold Himsworth has recently pointed out (Nov. 27) the need for hæmophilic patients to carry a card on their persons, declaring their condition and giving helpful details. May I re-emphasise the similar need for all diabetics on insulin, who are infinitely more numerous, and occasionally liable to attacks of hypoglycæmia—very puzzling if their condition is not known. Many diabetic clinics furnish these patients with a personal card, stating the insulin dosage, &c., and the need for restorative sugar in hypoglycæmia. But I know that all such patients do not carry this and I would urge their doctors to see that they do. A useful card is issued and willingly supplied by the British Diabetic Association, 152, Harley Street, W.1. Every patient having insulin should carry such a card, as well as sugar, on his person.

London, W.1. R. D. LAWRENCE.

TUBERCULOSIS IN IMMIGRANTS

SIR,—There is an increasing realisation of the danger from pulmonary tuberculosis run by Irishmen migrating from rural areas to work in towns in their own country or in England. Ireland is generally regarded as a land where the tubercle bacillus is not hard to find; but true as this may have been of urban areas it is inapplicable to those country districts whence many of our Irish immigrants originated.

Flynn and Joyce[1] have reported on a tuberculin survey in rural Ireland and found that in County Roscommon 14·5% of eighteen-year-olds were still tuberculin-negative. They point out that this population is at particular risk from pulmonary tuberculosis on moving to a more highly infected area.

Your leading article of Oct. 30, referring to the report by the Medical Research Council of Ireland,[2] stresses the existence of an immunologically unprotected population in rural Ireland. The report urges the B.C.G. vaccination of those tuberculin-negative persons who leave the country to work in cities in Ireland or abroad. It is enlightening to learn from the same source that 10% of the cases of pulmonary tuberculosis on the Irish registers returned from England with the disease.

Hess and Macdonald[3] undertook a survey of pulmonary tuberculosis in Irish immigrants, as compared with Londoners, in five hospitals near London. They found the ratio of Irish patients to Londoners to be at least three times that expected on the basis of relative numbers in the general population. This is partly discounted by the fact that the inferior economic and social conditions of many of the Irish in London result in a higher proportion of them being unsuitable for domiciliary treatment; but their plea for B.C.G. vaccination of tuberculin-negative Irish immigrants among others is not invalidated. The same suggestion is made by Joules,[4] who states that the Home Office has repeatedly refused to ensure that immigrants are free from active and infectious disease, even though it bodes fair to being a sound economic investment.

The mass radiography of immigrants is another problem but it has a particular relevance to the admission of tuberculin-negative Irishmen in this and presumably other areas. It is common practice for two or more Irish labourers to share a single room. To contemplate the admixture of cases of open but undiagnosed pulmonary tuberculosis with tuberculin-negative individuals sickens the heart of the prophylactically minded tuberculosis physician.

1. Flynn, M. P., Joyce, J. C. *Tubercle*, 1954, **35**, 270.
2. Tuberculosis in Ireland: Report of the National Tuberculosis Survey (1950–53), submitted to the Medical Research Council of Ireland. *Dublin, 1954.*
3. Hess, E. V., Macdonald, N. *Lancet*, July 17, 1954, p. 132.
4. Joules, H. *Brit. med. J.* Nov. 27, 1954, p. 1259.

Of 292 cases of pulmonary tuberculosis entered in the register of the Willesden Chest Clinic in 1953, 52 (or 17·8%) have been Irish and most of these have been immigrants from rural Ireland. Many of them have required full periods of hospital treatment amounting in a few instances to major surgery.

It may be a difficult matter to secure B.C.G. vaccination of all susceptible Irish moving into dangerous areas, but to make it an integral part of migration formalities should be quite practicable. The necessity for this step must be tirelessly reiterated until the tardy machinery of official preventive medicine comes into action.

Willesden, N.W.10. KENNETH NICKOL.

SIR,—Many Irish immigrants to Britain break down with pulmonary tuberculosis, and because of this it has been alleged that the Irish "as a race" are particularly susceptible to the disease and that many of the immigrants bring the disease to Britain. Nothing is further from the truth.

Different investigators [1–6] have shown that 60–80% of the young adults (aged 15–20) in the rural areas of Ireland are tuberculin-negative, and a recent survey,[6] to which you refer in your leader of Oct. 30, has shown that the disease is uncommon among the rural population. This is in contrast to the high proportion of tuberculin-positive reactors and the high incidence of the disease in the Irish towns. But it is from the rural areas that the majority of immigrants come and most of them are young adults of 16 to 25.

These healthy young adults seek work in British cities where there is a higher incidence of tuberculosis than in the Irish countryside and where the majority of the adult inhabitants are tuberculin-positive.[7 8] On arrival in Britain very few of them have tuberculosis—only 4% of Irish patients in London sanatoria contracted the disease in Ireland.[9] They often live in overcrowded lodgings in congested parts of the cities where they become exposed to tuberculous infection. The men commonly engage in heavy manual work, the women often become waitresses or maids, and because they have no home life, they eat irregular meals and often poorly nutritious food. Unprotected because of their rural origin some fall an easy prey to the endemic tuberculosis of the city. Then they spread it to one another and to other susceptibles in their lodgings and at work.

Of course the problem is not limited to the Irish or to Britain but is world wide. It is the migration of young, unprotected rural dwellers to the cities of their own or other countries that matters. It happens to the Mayo and Kerry man in Dublin, to the Highland Scot in Glasgow, to the South American Indians in the cities of that continent, to the Arab fellaheen crowding into Cairo and Bagdad, to the Africans in the mines of Johannesburg, and to African students in the university cities of Europe.

The incidence of tuberculosis among the Irish in Britain is not known but it is certainly much higher than the over-all incidence of the disease in Britain or in Ireland. The Irish medical officers of health have estimated that about 300 persons with tuberculosis have been returning from Britain every year.[6] More than 1000 of them are on the Irish tuberculosis register and they form about 10% of the total. In recent years about 20,000 men and women have left the shores of Ireland for Britain each year so that the incidence of later infection among them is at least 1 in 70. However, many remain in Britain for treatment. This number is not known, but in a recent analysis[9] it was found that the number of Irish patients in five London sanatoria was at least 3 or 4 times that expected from their number in the population. It was also found that nearly 90% of the girls were suffering from a progressive *primary* infection and that this form of disease was more common in the Irish than in the London males. If we assume that the same number of Irish men and women, 300, are treated annually in British hospitals as return to Ireland—a conservative estimate—then the annual incidence of breakdown is at least 3%. This is approximately 30 times the over-all incidence in Britain and about 14 times that in Ireland.

What can be done? The Irish report [6] has recommended: "since many emigrants from rural Ireland are tuberculin-negative . . . it is essential that they should be protected against tuberculosis by B.C.G. vaccination before emigrating." We have yet to know how well this admirable recommendation is being implemented. However, the susceptibility of these healthy young Irish people should not be used as a barrier to their migration to Britain or elsewhere. In this connection one of the recommendations of the North West Metropolitan Regional Hospital Board,[10] although well intentioned, is disturbing. The board recommends to the Ministry of Health "that this danger to the immigrants and others could be minimised if . . . B.C.G. vaccination, where necessary, were *required* . . . in the country of origin" (my italics). This would be reasonable if there was a national, compulsory B.C.G. policy in Britain; in its absence compulsion is out of place and would be political dynamite.

What is the alternative? The reasonable and practical solution of the problem lies in the fullest active, energetic, and friendly coöperation of the British and Irish health ministries and local health authorities. In Ireland, tuberculin testing and B.C.G. vaccination (when indicated) of all emigrants *should* be carried out: in Britain all immigrants who cannot satisfy the authorities that this has been done *should* be tuberculin-tested and vaccinated if necessary. Other desiderata are tests to ensure that infectious patients from abroad do not reach the general population, case-hunting among the immigrants now residing in Britain, and the provision of sufficient decent hostel accommodation where regular meals and a substitute for a home life can be provided. Effective propaganda in Ireland and in Britain could educate those concerned about the danger to which they are or will be exposed and about the protection offered by B.C.G. Then, compulsion will not be necessary.

Birmingham. S. SEVITT.

HOARSENESS AND CORONARY THROMBOSIS

SIR,—We have noted during the past year a hoarseness of the voice occurring in patients with coronary thrombosis. In the majority of these cases, the patients themselves confirm that their voices have become weak and hoarse, and they also complain of a dryness in the throat. They are unable to account for these changes themselves. The onset appears to be almost coincident with the onset of chest pain, and the voice does not return to normal until the second or third week in hospital.

At present, we are accumulating evidence, both with a view to establishing a definite association between hoarseness and coronary thrombosis, and in an attempt to determine a precise cause. We have considered that the voice changes might be secondary to inflammation in the throat or chest, but in fact there seems to be no such connection—although a few patients also suffer from either a sore throat or bronchitis. Other possible causes may be: the action of drugs (such as morphine), changes in smoking habits, respiratory distress, vomiting, or the general effect of debility and lowering of blood-pressure. So far it appears that there is some local inflammation of the larynx (of uncertain cause) which is not associated with inflammation in the throat or chest.

A precise explanation of what seems to be a definite voice change occurring in coronary thrombosis might

1. Price, D. S. *Irish J. med. Sci.* February, 1952, p. 85.
2. Burke, P. J. *Brit. med. J.* 1951, ii, 887.
3. Cowell, J. St. P. *Irish J. med. Sci.* July, 1952, p. 358.
4. Scallan, B. *J. Irish med. Ass.* 1951, **28**, 49.
5. Irish Red Cross Tuberculin Survey. *Irish J. med. Sci.* April, 1947, p. 256.
6. Tuberculosis in Ireland: Report of the National Tuberculosis Survey (1950–53), submitted to the Medical Research Council of Ireland. Dublin, 1954.
7. Daniels, M. *Tubercle*, 1951, **32**, 176.
8. Daniels, M. *Proc. R. Soc. Med.* 1952, **45**, 11.
9. Hess, E. V., Macdonald, N. *Lancet*, July 17, 1954, p. 132.
10. *Ibid*, Nov. 27, 1954, p. 1118.

provide the basis of a helpful sign in the diagnosis of this common condition. We hope to be able to present a more detailed account at a later date.

We have found no previous mention of the phenomenon, and wonder whether any of your readers are familiar with it.

Peace Memorial Hospital, Watford, Herts. I. SARKANY
G. F. B. BIRDWOOD.

HÆMOLYTIC TRANSFUSION REACTIONS

SIR,—Pathologists who work in smaller laboratories owe a debt of gratitude to Dr. Discombe (Nov. 6) for drawing attention to the embarrassment that can be caused by official memoranda on grouping and cross-matching. A better way to disseminate knowledge of grouping procedure and techniques is surely by books and papers in medical journals. Official memoranda tend to make pathologists uneasy because in practice they will sometimes have to disregard instructions which they fear may be subsequently quoted against them. Dr. Whitwell (Dec. 11) well brings out the fact that a pathologist working to rule could bring about just as much chaos as a railwayman working to rule.

I should like to draw attention to the administrative position with regard to the cross-matching of blood at times outside normal laboratory hours.

The various memoranda imply that it is the duty of the pathologist to advise management committees to set up a 24-hour laboratory service. To quote *Notes on Transfusion*: "The Rh group of every person who is to receive a transfusion should be determined. . . . These tests should be performed only by experienced workers. If in doubt of the procedure to be followed in a particular case the hospital pathologist should be consulted." Management committees and regional boards have insufficient administrative powers in many cases to set up 24-hour laboratory services. There is power to pay the small sum of ten shillings to technicians who will agree to remain overnight in the hospital, but the technicians rightly cannot be compelled under their terms of service to undertake this duty. If, as an alternative, a management committee wishes to make a small reasonable addition to a laboratory technician's pay as a consideration for agreeing to stand by at home on a rota for calls at the hospital, permission will have to be requested from the Ministry of Health. It is likely that the permission would be refused as being contrary to an award of the Industrial Court.

The Ministry's unwillingness to spend more than a strictly limited sum on 24-hour laboratory services is probably reasonable. The benefits of such a service in smaller hospital groups will often not justify the high cost. But this being so, official memoranda should not be issued advocating ideal practices which, for financial reasons alone, cannot be followed except in the larger centres.

Northallerton, Yorkshire. P. N. COLEMAN.

SIR,—I would humbly suggest that there is only one answer to the question of technique and that is the question of conscience. Personally, if I were unfortunate enough to require a blood-transfusion, having first satisfied myself that it was really necessary, I should require the blood to have been cross-matched by a 2-hour tube technique in albumin at 37°C and in saline at room-temperature. I should also expect the blood to have been examined macroscopically for hæmolysis and microscopically for bacteria. If these criteria were fulfilled I would not worry unduly about the age of the blood (within 30 days of its being taken) nor about a Coombs test as, so far as I am aware, I am not a dangerous recipient.

When, therefore, I am asked to cross-match blood I carry out the procedures which I would expect another pathologist to carry out if I were the patient. If any other pathologist would require less stringent precautions in his own case then no doubt his conscience would allow him to relax the appropriate investigations when he was preparing blood for others.

In conclusion I would state that I feel this criticism of Dr. Heggie is very unfair, for he, like many of us, is convinced of the risks, among others, of giving infected blood and has publicised this fact. There are still, unfortunately, laboratories where prodding is required before new and improved procedures are introduced, as was borne out only too vividly when, 18 months ago, I stayed overnight at a town many miles from here and happened to read an account of a transfusion disaster at the local hospital, where it was admitted that the regular procedure was to cross-match all blood in saline.

Objections on the score of shortage of space and staff never convince me, as it often happens that both are readily available for some favourite research project not long afterwards.

Godalming Group Laboratory. W. K. TAYLOR.

SIR,—If Dr. Whitwell and Dr. Vickers (Dec. 11) work under unsatisfactory conditions in Liverpool, there must be something far wrong in the pathological set-up in that area, as proper representation to the regional board would, I am sure in a matter of this nature, give rise to the greatest consideration and betterment of existing conditions.

General Hospital, Northampton. R. M. HEGGIE.

SYMPTOMATIC UROPORPHYRINURIA

SIR,—The article by Dr. With and Dr. Petersen (Dec. 4) reminds me of the dangers of barbiturates in those rare cases of acute porphyria in which the patient has taken no drugs such as sulphonal and lead, gives no family history, and yet presents as an "acute abdomen." To induce anæsthesia with thiopentone in such a patient may precipitate a fatal episode; and in every atypical acute abdomen the anæsthetist should, I feel, request the laboratory to test the patient's urine for porphyrins. If these are present in large amounts he should avoid the use of barbiturates; and should a laparotomy be deemed essential then perhaps the "lytic cocktail" coupled with a relaxant and gas-and-oxygen would be the anæsthetic of choice.

Hull. W. N. ROLLASON.

CANCER OF THE RECTUM

SIR,—In your leader of Oct. 23 you ask: "Are such massive or repeated operations justified?" referring to total pelvic exenteration with wet colostomy. Admitted that total pelvic exenteration is a heroic surgical procedure and the formation of a wet colostomy a very radical alteration of normal anatomy and physiology. That this operation is justified was a question debatable a short time ago and this is quite understandable. However, with the passage of time and the accumulation of experience it has become apparent that five-year cures are achieved by this operation and that adjustment to the wet colostomy is quite feasible. These patients return to their usual occupations and indeed experience only minor limitations in their general physical activities. Given the extensive nature of their cancers and the fact that conservative surgical and/or full radiological treatments have been exhibited and failed, nothing but death in relatively short order is the outlook for them. It would seem that the question no longer is "should exenterations be performed?" but the question is "when and by whom should they be performed?" because they are truly life-saving procedures, not to mention their palliative effect when cure cannot be achieved.

It is my practice always to fully explain to the patient the extensive nature of the operation and the changes it involves. The final choice is always freely made by the patient and never on the insistence of the surgeon.

A patient has the right to decide whether he wants a final chance to live and under what conditions he will live. It is not entirely within the province of the physician or surgeon to make up his own mind concerning "exenterations" and, if he rejects the idea, to exclude the patient and the family from the deliberations and decisions. The question of whether or not an operation is a good one must not be confounded with the question of a surgeon's personal views when once it has been demonstrated that the operation can surely afford a chance for definitive cure.

New York. ALEXANDER BRUNSCHWIG.

MUNCHAUSEN'S SYNDROME

SIR,—Some time ago you published a great deal of correspondence on this subject. It appears that the patients described in your columns create an interesting psychological problem, as well as a serious social one. Their frequent admissions to hospitals under various assumed names add to the strains and the expenses of the hospital service, especially since they usually present a variety of spectacular symptoms and willingly undergo a number of serious operations. It is therefore a problem worth investigating, and we have embarked on an intensive research of a small number of patients. We aim at psychiatric and psychological analysis of the syndrome with the use of case-study and personality tests.

If any of your readers are able to direct their patients to us for examination and possibly treatment at a large and active mental hospital, we should be very grateful.

Banstead Hospital, Sutton, Surrey. I. F. COLLIE
T. G. GRYGIER.

GALL-STONE ILEUS

SIR,—Gall-stone ileus, though a well-known condition, is relatively rare: Wright and Trafford [1] found only 600 recorded cases. Macfarlane [2] has lately described a case of recurrent ileus.

The diagnosis is not easy, and the mortality is high, since many of the patients are old and feeble, and weakened by the persistent pain and vomiting. The three cases recorded here illustrate these points; in one patient the stone was radio-opaque, which is unusual; in the same patient it was possible to prove, by a post-operative barium meal, that fibrosis round the gall-bladder had sealed off the biliary ducts. In none of the cases was evidence of cholangitis found, either clinically or at laparotomy.

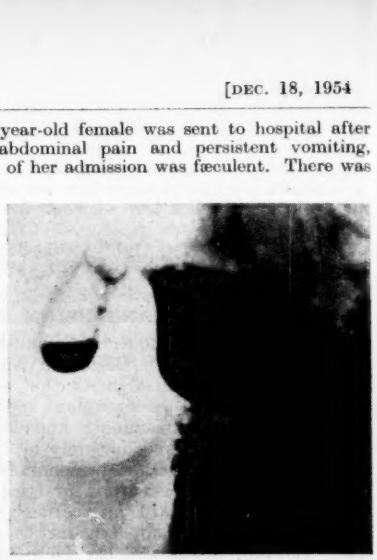
CASE 1.—An 86-year-old woman was admitted to hospital after 48 hours' severe generalised abdominal colic and copious vomiting; her bowels had not been opened for 2 or 3 days; the pains had become more frequent and more severe in the 24 hours before admission. There was generalised abdominal distension and some tenderness in the right iliac fossa.

Laparotomy under local anæsthesia revealed a large gall-stone impacted in the terminal ileum, which was distended and covered with exudate; the stone was milked back to a portion of normal gut and removed. The patient had a second attack of ileus during convalescence, and died on the 15th day after admission. Necropsy revealed a large gall-stone in the small bowel, a large fistula between the gall-bladder and the stomach, and several other stones in the gall-bladder.

CASE 2.—An 84-year-old female was admitted after 3 days' colicky abdominal pain and vomiting; her bowels had not opened for 2 days. On admission she was dehydrated; her abdomen was distended but not tender; straight radiography of the abdomen showed a laminated opacity overlying the sacrum. At laparotomy a large gall-stone obstructing the terminal ileum was found and removed; dense adhesions obscured the region of the gall-bladder. A subsequent barium meal showed a fistula between the duodenum and the gall-bladder. This patient made a complete recovery.

1. Wright, P. J. M., Trafford, P. A. *Brit. J. Surg.* 1953, **41**, 6.
2. Macfarlane, J. A. *Brit. med. J.* 1953, ii, 544.

CASE 3.—A 90-year-old female was sent to hospital after 5 days' colicky abdominal pain and persistent vomiting, which at the time of her admission was fæculent. There was generalised abdominal distension; straight radiography showed only doubtful fluid levels in the small intestine. Laparotomy under local anæsthesia revealed three large gall-stones obstructing the lower ileum; these were removed. The patient's condition before and during the operation was poor, and she died soon after her return to the ward.



The accompanying radiograph shows the gall-bladder and fistula outlined by the barium in case 2. The absence of barium from the biliary ducts confirms the laparotomy finding of fibrosis sufficient to close the ducts. Wright and Trafford believe that in such circumstances reflux of intestinal contents into the biliary ducts is improbable, and cholangitis cannot therefore develop.

Hackney Hospital, London, E.9. R. F. READ.

RED HALF-MOONS

SIR,—Since submitting my paper on red half-moons in cardiac failure (Oct. 23), I have encountered 3 examples which strengthen my feeling that an endocrine factor is involved.

One was in a well-developed, healthy, attractive girl, aged 17, who had vivid red half-moons; she also had 13 large spider nævi scattered over her trunk and arms. The second was in a man, aged 50, whose myasthenia gravis had been in complete remission for two years; in addition to markedly red half-moons, he had gross palmar erythema. Neither had any other endocrine stigmata or any evidence of hepatic cirrhosis. The third example was in a gravid multipara, aged 30, whose half-moons were observed almost daily: initially normal, the half-moons became reddened at the fourth month of pregnancy and are still abnormal at the eighth month.

If I am correct in thinking that red half-moons are of endocrine origin, then their detection is probably worth while. Their diagnostic value is another matter: they are clearly not pathognomonic of any one disorder, but like other endocrine stigmata, it seems unwise to ignore them, even though they occur in "normal" people.

I was interested to read Dr. Boylan's experience (Nov. 6) of red half-moons in "healthy" people. However, I am sure he will agree that it is not always easy to diagnose health; and one cannot help wondering to what extent the cancer-screening investigations of his clinic excluded non-malignant disorders in general, and cardiovascular and hepatic disorders in particular, especially when one remembers the cost of these investigations in the United States. Markedly red half-moons in malignancy are rare in my experience; it is curious that Dr. Boylan should have found them so common and for the moment I have no explanation to offer.

As regards Mr. Berry's remarks (Nov. 6) regarding the formation of the half-moon, I should not be surprised if he is right. I have to confess that I have made few in-vivo observations on the nail-bed after excision of the nail, although those I have seen have not shown the

appearances he described; but my remarks were based upon study of excised nails and were chiefly stimulated by the fact that other observers had apparently overlooked the schism between the nail and the matrix in the half-moon area.

Chicago. RICHARD TERRY.

PATIENT'S DAMAGES

SIR,—A competent, amoral virus and a good general practitioner have prevented me from noting Dr. Farnan's letter of Nov. 27 until now.

Dr. Farnan said on Oct. 30 that any treatment "was always a right: and in law . . . it was never anything else." These were the words which brought me into this correspondence. Ethics now puts its nervous head round the door.

Nobody doubts the ethical drive behind medicine and many of its practitioners, but the (for example) individual surgeon's level of skill does not necessarily keep pace with his level of ethics, and the reverse. This being so, and having regard to the applications of an "inexact science," ethics cannot be permitted to anticipate the Greek kalends and take the medical profession outside the law.

Shirley, Croydon. W. J. CRABB.

SIR,—The issue seems to be becoming fogged and bedevilled. The point is, as Dr. Farnan says, that medicine is a developing and evolutionary art and so also is the common law of this land. The law now merely states that an employing authority is responsible for the *negligence* of all the people who work for it—that is all. There is no reason why doctors, any more than physicists or pharmacists, nurses, or navigators, should be privileged persons outside the scope of our common law.

London, S.E.13. A. J. TASKER.

GOITROGENIC HAZARD OF COBALT

SIR,—We have for some time past been studying the erythropoietic effect of cobalt upon anæmia in infants, particularly prematures. Some of the results have been reported earlier this year at meetings of the British Pædiatric Association and the Dutch Pædiatric Association. We had met with no toxic effects until recently, when a premature infant who had received 9 mg. of cobalt (as a cobaltous salt) daily for 7 weeks developed a moderately large goitre and ceased to thrive. Cobalt was stopped and thereafter normal progress was resumed, the goitre disappearing within 3 weeks.

That this was the result of the cobalt seems certain, since the goitrogenic effect of cobaltous salts has now been reported from two other sources. Gross et al.[1] gave cobalt in doses of 2·5–3 mg. per kg. daily for 6 weeks to children with sickle-cell anæmia; two out of four children developed goitres with evidence of hypothyroidism. McBryde[2] gave 5 mg. of cobalt daily to ten premature infants; at the end of 6 weeks one infant had a goitre.

We hasten to call attention to this hitherto unsuspected danger in the use of cobalt salts. Until more is known about the effects of cobalt it seems important that its use should be regarded as still in the experimental stage. The time is certainly not ripe for cobalt to be added to iron preparations and given freely. This caveat is necessary because an iron-cobalt preparation is now being advertised, no mention being made of the possible effects of cobalt outside the hæmopoietic system.

DOUGLAS GAIRDNER
JOHN MARKS
Addenbrooke's Hospital, Cambridge. JANET D. ROSCOE.

1. Gross, R. T., Kriss, J. P., Spaet, T. H. *Amer. J. Dis. Child.* 1954, **88**, 503.
2. McBryde, A. G. *Ibid.*

ADOPTION OF CHILDREN

SIR,—Though I quite agree that a child should be told he is adopted, I would not advocate that the parents be under a legal compulsion to do so, because this question is so vital a part of the intimate relationship between parent and child that no outside authority should be entitled to interfere.

But the main point I want to stress is one which has not been mentioned in the previous correspondence. How can we tell a child that he is adopted and explain the meaning of it to him unless we make him *first* understand what is generally called "the facts of life"? If all the children in the family are brought from somewhere by the stork, what then is the difference between him and his foster-brothers? What does it mean to a child to be told "I am not your real mother"? Nothing, unless he knows something of the natural link between mother and child. To a child, not knowing the facts, mother is not the woman who has borne him but the one who feeds him, looks after him, loves him.

In my opinion, it is therefore logically necessary to explain the facts first before revealing the adoption; and that calls for the first to take place at a comparatively early age and makes postponement of the second a necessity.

Croydon, Surrey. W. J. PINOFF.

USE AND ABUSE OF ANTIBIOTICS

SIR,—Your report of Dec. 4 of the meeting at the Royal Society of Medicine reveals a critical attitude towards the use of antibiotics which may mark a turn in the tide of fashions in therapy.

It is said that the onlooker sees most of the game, and in that capacity the hospital pharmacist may be forgiven for entertaining a few doubts about the very high cost of antibiotics which he is called upon to meet. If the experiences you report encourage greater restraint in the prescribing of antibiotics he will no doubt be relieved of some of the pressure put on him by anxious administrators.

However, at the present time there seems to be an impression abroad that the cost of pharmaceutical supplies is excessive and that somewhere or other great savings could be made. As taxpayers we are all anxious to avoid any waste and are on the search for means of keeping down the cost of the service.

It is therefore important to have our facts right. May I then express surprise at Sir Henry Cohen's statement that in all large hospitals penicillin accounts for 50% of the expenditure on drugs. Very few hospitals to my knowledge have made an analysis from which such information could be derived, and from those which have I would suggest that a more accurate estimate would be that 25% of the total drug expenditure is taken up by all antibiotics.

It is noteworthy also that the cost of drugs and dressings in the hospital service accounts for only 3% of the total expenditure (according to the summary of accounts recently published by the Ministry of Health).

Whilst this is no cause for complacency it does suggest that in squeezing the budget the enthusiasm of administrators might be more profitably directed into channels other than the pharmaceutical department.

Westminster Hospital, London, S.W.1. HERBERT S. GRAINGER
Chief Pharmacist.

SIR,—Sir Henry Cohen is reported as saying that "he had been struck by the fact that 50% of the drug bill of every large hospital was for penicillin." This is far from the truth where this hospital is concerned. In the year ending last March, penicillin accounted for only 11·5% of our drug bill, and the amount spent on all antibiotics, including penicillin, only came to 26·5% of the total expenditure on drugs. One way in which this difference

could be produced is by the excessive prescribing of drugs, other than antibiotics, but of this I have no evidence in this hospital. Nor can I believe that patients here who require antibiotics are denied them.

Although it is necessary for due thought to be exercised before antibiotics are prescribed, it is also essential to ensure that courses are not unduly protracted, and to see that materials no longer required by the wards are returned to the pharmaceutical department for re-issue before they have lost their activity. By following this course unnecessary expense can be reduced and considerable economy effected.

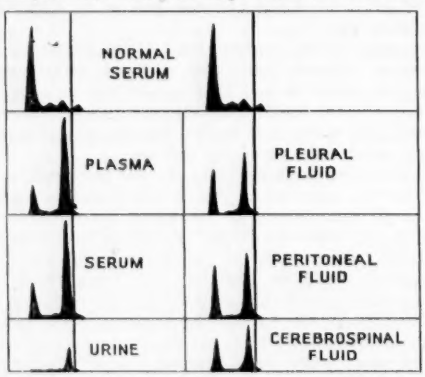
St. Bartholomew's Hospital,
London, E.C.1. J. R. ELLIOTT.

CRYOGLOBULIN IN LYMPHOID LEUKOSIS

SIR,—Last year we reported [1] a case of what appeared to be cryoglobulinæmia in alcoholic cirrhosis. The patient continued under our care until his death in July, when necropsy revealed the true nature of the condition to be lymphoid leukosis.

The patient showed very little change either physically or biochemically until March, 1954, when he complained of some difficulty in swallowing, and radiographs indicated a carcinoma of the œsophagus. In July he was admitted in a moribund condition. His Hb was then 7·1 g. per 100 ml., he had 2 million red cells per c.mm., and an erythrocyte-sedimentation rate of 159 mm. at 1 hour (Westergren). Serum-protein estimations showed total protein 9·4 g. per 100 ml. (albumin 30·8%, α_1-globulin 2·5%, α_2-globulin 7·2%, cryoglobulin $+\beta$ 54·8%, γ-globulin 4·7%). It was impossible to cross-match his blood because his serum produced marked false agglutination, but on the basis of a negative indirect Coombs reaction he was given two pints of blood which produced only a transient improvement, and he died on July 20.

Necropsy was performed sixteen hours after death. As his blood, which was very fluid, fell on the cold porcelain table it agglutinated spontaneously. Ascites and extensive pleural and pericardial effusions were present. The cerebrospinal fluid was gelatinous. Electrophoretic patterns obtained on plasma, serum, urine, pleural, peritoneal, and cerebrospinal



fluids showed that cryoglobulin was present in all (see accompanying figure). There was gross enlargement of all the lymphoid tissue, and microscopical examination showed that all lymph-glands, both kidneys, the heart and pericardium, the liver, meninges, and suprarenal capsules were extensively infiltrated with cells resembling large lymphocytes. The œsophagus showed a small squamous-celled carcinoma which did not invade the regional lymph-nodes. No cirrhotic changes were present in the liver, and the bone-marrow showed no abnormality.

Out thanks are due to Prof. A. H. T. Robb-Smith for help with the histological diagnosis, and to Mr. E. Poynter for the electrophoretic photographs.

LOUIS L. GRIFFITHS
LEO GILCHRIST
M. B. KING
V. ANNE L. BREWS.

Farnborough Hospital,
Kent.

1. Griffiths, L. L., Gilchrist, L. *Lancet*, 1953, i, 882.

HAZARDS OF BLOOD-TRANSFUSION

SIR,—Dr. James's article of Oct. 16 prompts me to mention the cerebral complications which may follow blood-transfusion. In 1950 I described a case of cerebral thrombosis following transfusion for severe refractory iron-deficiency anæmia in a boy aged 11.[1]

Six days after admission he developed a severe headache and he vomited several times. He was irritable and confused. On the following day he had a left-sided convulsion which began with twitching of the left side of the face. The twitching was followed by a tonic stage, with clenching of the teeth and cyanosis. There was no involuntary micturition and no biting of the tongue. He was unconscious for five minutes. After the attack he was confused. A lumbar puncture revealed no abnormality.

He had two further epileptiform attacks. After the third convulsion he remained semicomatose and had a left-sided hemiplegia. He gradually improved during the next four weeks, except for a left homonymous hemianopia, which persisted.

The most likely cause for the hemiplegia was thought to be cerebral thrombosis, and there can be little doubt that transfusion was the precipitating factor. There was a considerable increase in the hæmoglobin concentration and in the red-cell count, and presumably the coagulability of the blood was materially altered.

Convulsive seizures, succeeded by coma, have also been attributed to anaphylactoid reactions.

Waveney Hospital,
Ballymena, co. Antrim. R. J. KERNOHAN.

A WORD WANTED

SIR,—Dr. Apley is both right and wrong. I am a thesaurist in so far as I usually have a couple of these useful volumes at hand, though perhaps I do not consult them as often as I ought. In this particular instance I assure him I consulted neither before writing the letter in question, though I have looked into Roget since to find him—for once—relatively inadequate. On the other hand, I am an anti-thesaurist to the extent that I think for the most part we have synonyms and antonyms enough already.

My real objection to his new word is on what I suppose are in essence æsthetic grounds. *Ante* and *post*, like *pro* and *retro*, have always run in harness (indeed, they are hyphenated in our racing editions!). Dr. Apley would, contrary to general usage, harness *ante* with *retro*, a combination which does not seem to me to harmonise very well. If, to continue the metaphor, he will go out boldly for his double and put his "antespective" between the shafts with "postspective," then I am quite prepared to venture a trifle on their joint chances though I am not sure if there will be many other backers.

I am by no means averse to the coining of new words if there is genuine need of them, and I am sure it can be great fun. Incidentally my protest against jargon was not directed against Dr. Apley but in general against so much of our current medical writing. So many papers today, especially those of transatlantic origin, are so impossibly stiff and pompous as to be almost unreadable; they seem in fact to have been composed by the electronic brain itself. This is, after all, a serious fault, for they are meant to communicate knowledge, and to do so they must attract and hold our attention. And though scientific papers in the nature of things can seldom make easy reading we might at least try to make them as palatable as possible for our prospective (or should it be antespective?) consumers.

The Medical Press,
London, W.C.2. G. E. BREEN.

SIR,—When reading your issue of Nov. 20, I came with a shock upon the word "antespective," on p. 1048—though something of an apologetic footnote, deferring

1. *Ulster med. J.* 1950, **19**, 183.

a part of the responsibility, was appended. I now feel sorry that I did not pay more attention to the previous correspondence.

It is a very ugly word without meaning. The Latin ante means before, having little or nothing of the meaning of πρός, which means before or also at the start, and from it comes the adverb πρωΐ, which means early. Thus antespective means "seen before it occurs" and is the same as prospective—the prospector going forth to find what he hopes for.

If "seen from the start" is wanted, why not use the word archeoptic (ἀρχή, ὄψις), which has exactly this meaning.

Bitton, near Bristol. A. T. TODD.

LIFE-ASSURANCE UNDERWRITING

SIR,—I was interested to read, in your annotation of Dec. 4, of the more liberal terms now offered by most life assurance offices. Although there is ground for complaint against some of the loadings imposed, at least the difficulty in assessing accurately mortality-rates of many diseases is appreciated. However, the practice of extending a policy debt, imposed because of, say, minimal pulmonary tuberculosis, to cover death from any other cause appears difficult to justify. The more so when death from a road accident would not invoke the deduction of the debt from the sum assured, whereas death from the "accident" of a perforated peptic ulcer or a carcinoma of the bronchus are treated as if they were caused by the disease for which the debt was imposed. It would not seem too difficult to exclude tuberculosis, or any other specific cause of death, against which a debt has been imposed, as an important factor in cases where some other disease—e.g., ischæmic heart-disease—was obviously the only relevant factor.

London, W.2. R. A. DALE.

TUBERCULOSIS IN CHILDHOOD

SIR,—In my letter of Nov. 13 I asked Dr. Sekulich to share his knowledge if he could indeed pick out benign primary cases from those which will become malignant. I admitted that I could not do this ab initio and suggested that he could make the differentiation only in retrospect when the case had been followed for some time. From his reply of Nov. 27 he admits that the differentiation is not possible on the basis of one examination alone and he goes on to say "but in practice it is hardly ever important." Dr. Sekulich would keep such cases under observation and "hope to discover promptly the minute fraction which might later exhibit signs of malignant primary disease." It should be remembered that the point at issue was my advocacy of chemotherapy in all infected infants irrespective of radiological findings. Dr. Sekulich disagreed, stating that "an exact diagnosis" was first necessary. He then went on to show what he meant by this and gave as his first category "radiologically invisible benign primary disease with at least a positive tuberculin reaction." It appears that Dr. Sekulich has to observe the progress of the patient before he can determine whether the case belongs to this category or not and meanwhile he would classify them provisionally as benign primary disease and deal with them accordingly. Here then is the crux. I would treat all infected infants prophylactically with antibiotics whilst Dr. Sekulich apparently would give antibiotics only to the few who develop malignant complications.

Dr. Sekulich urges us to "think pathogenetically," but when I say that chronic pulmonary tuberculosis sometimes arises so closely after the initial infection that the primary disease cannot possibly have had time to become quiescent, Dr. Sekulich says this type of case is "really malignant primary disease." Naturally Dr. Sekulich is entitled to his own private classification if he likes, but to me it seems completely unhelpful to lump together cases, often of an extremely insidious nature, in adults with chronic pulmonary tuberculosis quickly following on initial infection, and cases in infants dying of meningitis and miliary disease, and to call them all "malignant primary tuberculosis." But then probably I do not think as pathogenetically as Dr. Sekulich.

Brentwood, Essex. F. J. BENTLEY.

SMOG

SIR,—Your leading article of Dec. 4 contains one small error. The word "smog" was coined, not in Los Angeles, but London. I have seen the original papers and news-cuttings. The fiftieth birthday of this ugly, useful, and unequivocal "portmanteau" word can be celebrated now. No less an authority than the *Church Family Newspaper* dated Jan. 20, 1905, records that Dr. Harold Des Voeux a physician-coursellor of many distinguished people [1] and one of the founders of the Coal Smoke Abatement Society [2] "has recently come before the public with a new word, which will doubtless find its way into the English language. . . . Dr. Des Voeux's new word is 'smog.'" A British contribution!

Health Department,
Salford, 5. J. L. BURN.

TREATMENT OF CORONARY THROMBOSIS

SIR,—The treatment of coronary occlusion and myocardial infarction with dicoumarol-type anticoagulants has been seriously challenged of late. These drugs achieve their reputation in two ways.

Firstly, the extent of the further spread of an initial thrombus is limited by a reduction of available prothrombin.

For a massive thrombus, this limitation of spread is possibly effective, but for the small amount of further thrombus formation required to cause widespread occlusion of the coronary tree, the reduction of total prothrombin is probably of no significance at all. Furthermore, Lyons [3] has shown that dicoumarol influences only the free prothrombin primarily; and when thrombin and fibrinogen act together to form fibrin, liberation of prothrombin occurs which was previously bound as a fibrinogen-prothrombin complex. This suggests that there is always a surfeit of prothrombin available, even though hypoprothrombinæmic bleeding is occurring; the low levels of prothrombin being maintained only until coagulation has liberated the bound fraction; and that even in the presence of severe and widespread coagulation, as occurs in afibrinogenæmia of pregnancy, where the fibrinogen is filtered out in the capillary bed as fibrin, normal amounts of prothrombin are observed in the plasma when it is mixed with prothrombin-free plasma. So it would appear that the reduction of total prothrombin during dicoumarol administration is virtually of no importance at all in the therapy of coronary thrombosis.

Secondly, by a reduction in the prothrombin level to a figure which is precariously near that where spontaneous hæmorrhage may occur, the "coagulability" of the blood is so reduced that further thrombosis is prevented. Unless the prothrombin is below 25%, however, there is no significant change in the coagulation-time, and continued therapy above this level is really worthless. Hence satisfactory therapy aims at a prothrombin between 10% and 25%, which requires repeated and accurate estimations, and there is always the risk of a spontaneous bleed. Thus, treatment of coronary thrombosis with this type of anticoagulant is far from the ideal, and our premises for their routine continual use are indeed shaky.

London, S.W.1. C. LANDON SMITH.

1. Sir John Charles: Atmospheric Pollution in Relation to Preventive Medicine. Fourth Des Voeux Memorial Lecture. 1953.
2. *Smokeless Air*. 1954, no. 91, p. 12. (National Smoke Abatement Society, London.)
3. Lyons, R. N. *Aust. J. exp. Biol.* 1954, **32** 120.

HARDENED FATS AND LUNG CANCER

SIR,—Both tobacco-smoking and atmospheric pollution appear to play a part in causing lung cancer; but clearly there must be other ætiological factors, since the ratio of men to women dying from the disease is much greater than the ratio of men to women who smoke, and the difference in the mortality-rates in urban and rural areas is less than would be expected if atmospheric pollution were the sole cause. There is reason to believe that the increasing incidence of lung cancer may be related to the increasing consumption of hardened fats.

The cell membrane is largely composed of lipids, with which carcinogenic hydrocarbons readily interact. Since food fatty acids appear in depot fats largely unaltered, their constitution has an important bearing on this interaction, which may be the precursor of malignant changes. Experimentally, lung cancer has been produced by carcinogens introduced at sites other than the lung itself; hence investigation should not be limited to carcinogens acting directly on the lung.

Mueller et al.[1] reported that certain carcinogens were destroyed in the oxidation of fatty acids. Dickens and Weil-Malherbe[2] showed that if a carcinogen was injected subcutaneously into mice together with hydrogenated mouse fat, the latent period before the appearance of cancer was shortened; elimination of the carcinogen was accelerated if the fat was non-hydrogenated (unsaturated).

Sobel and Marmorston[3] demonstrated that certain carcinogens were destroyed if exposed to squalene (related to the carotenoids), which is highly unsaturated; squalene had little effect, however, on the strong carcinogen benzpyrene. Beck[4] fed 3:4 benzpyrene in lard to two groups of mice, one group having milk to drink ad lib., the other group water: in the first group tumours appeared on an average 70 days later than in the second group, and were about 40% fewer in number. Although not conclusive, these trials show that milk containing butter-fat (which contains the unsaturated essential fatty acids, linoleic and arachidonic acid, with double bonds at the 6:7 and 9:10 positions) counteracts the carcinogenic effect of benzpyrene. Other trials have shown that cod-liver oil (rich in unsaturated fatty acids, but not containing the essential fatty acids) has no inhibitory effect on carcinogens.

Deuel et al.[5] depleted rats of essential fatty acids, and measured their survival-time after exposure to carcinogenic doses of X rays: the survival-time in rats receiving methyl linolate was significantly longer than in rats given a basal, fat-free diet without linolate.

Thus, unsaturated fatty acids, and especially linoleic and arachidonic acid with their reactive diene content possessing F-activity, are apparently necessary in the body's defence against carcinogens. Assuming that carcinogens are destroyed or inactivated by anti-substances in the cell-membrane, it seems likely that cancer appears only when long exposure to carcinogens has worn down this defence mechanism, which depends on anti-substances produced at, or transported to, the site of exposure; and that these anti-substances are the unsaturated fatty acids, and the essential acids in particular.

In the manufacture of hardened fats hydrogenation is usually selective: it reduces unsaturated fatty acids, and almost eliminates essential acids. Moreover, it is carried out at about 180°C in the presence of nickel catalysts, and it is known that high temperature, especially in the presence of catalysts, favours the formation of carcinogens; hence these may contaminate the final product also. Hardened fats are used in shortening, margarine, and artificial creams, and recently also in chocolate products. In 1936, according to Boyd Orr,[6] the average annual consumption of margarine per head of population in Britain was 3·7 kg., and of butter 11·5 kg. The corresponding figures today are 9·5 kg. (margarine) and 7·2 kg. (butter). This increased consumption of hardened fats may well have contributed to the increased incidence of lung cancer. Other ætiological factors undoubtedly operate; but if the rising incidence is to be checked, every circumstance which might weaken the body's defence mechanisms should be considered and if possible eliminated.

Copenhagen. JOHAN E. NYROP.

1. Mueller, G. C., Miller, J. A., Rusch, H. P. *Cancer Res.* 1945, **5**, 401.
2. Dickens, F., Weil-Malherbe, H. *Ibid*, 1946, **6**, 161.
3. Sobel, H., Marmorston, J. *Nature, Lond.* 1954, **174**, 553.
4. Beck, S. British Empire Cancer Campaign. Report for 1953, *p. 264.*
5. Deuel, H. J., Chang, A. L. S., Kryder, G. D., Bingemann, M. E. *Science*, 1953, **117**, 254.

ŒDEMA AND BELL'S PALSY

SIR,—As your correspondents have pointed out, the case of recurrent facial swelling and Bell's palsy described by Dr. Muir, in his letter of Oct. 16, fits perfectly into the picture of the Melkersson-Rosenthal syndrome. The latest review of this condition, as far as I know, is that by Hauser.[7]

Biccur Cholim Hospital, Jerusalem. A. KAATZ.

A BLOOD-TRANSFUSION PUMP

SIR,—I should like to add to Mr. Jordan's observations (Nov. 20) on the blood-transfusion pump described by Mr. Martin.

For some years past (particularly and extensively in the Greek-Italian war of 1940) we have been using a table-model pump in Greece, based on the practice of "milking" the tube, which was originally used by Professor Beck of Hamburg. Mr. M. Paidoussis, a pioneer of blood-transfusion in this country, has improved the system by the addition of a safety-catch to prevent adverse movement, and a device for regulating the rotating rollers and thus the rate of blood-flow through the tube. He has also attached to the pump a revolution-counter indicating the quantity of blood used.

I have recently used with much success in an exchange transfusion a new version of this pump developed in my laboratory.

Athens Polyclinic, Greece. N. C. CONSTANTOULIS.

REDUCTION OF THE SAC IN REPAIR OF FEMORAL HERNIA

SIR,—The operation for radical cure of femoral hernia is nowadays almost always the Lotheisen operation. Once the sac is located, the problem is how to restore it. In thin subjects this is easy: the fascia is incised, the peritoneum is readily identified leading to the canal, and by judicious to and fro movements the sac (reduced to a reasonable size) is delivered into the abdomen. In fatty subjects it is much more difficult. The bladder may encroach on this area, the femoral vein and artery lie very close laterally, and the deep epigastric vessels cross the field in the lateral corner. Moreover in fatty subjects there are numerous thin-walled unsupported veins which bleed readily and may further confuse the picture. Opening the peritoneum can under such circumstances be time-consuming, and not without its hazards.

Some writers suggest that after opening the peritoneum from above a pair of curved artery-forceps should be passed downwards through the canal to grasp the fundus of the sac and pull it upwards. This is sometimes very easily carried out; but more often, even in the most experienced hands, it may be very difficult and time-consuming. I suggest an alternative method:

(1) A catgut suture is passed through a portion of the sac just below Poupart's ligament and tied, leaving the ends long. (2) The loose ends of the suture are grasped with curved Spencer-Wells forceps and passed upwards through the femoral canal for an inch or so.

6. Boyd Orr, J. Food, Health and Income. London, *1936.*
7. Hauser, W. Disch. Zahnarztl. Z. 1953, **8**, 986.

(3) The fascia transversalis having previously been exposed, the handles of the forceps are depressed so that the points of the forceps carrying the suture project upwards. These are cut down on through the fascia transversalis and peritoneum, exposed, and the ends of the suture grasped with another pair of Spencer-Wells forceps.

(4) All the bulky redundant portion of the sac is cut away, leaving enough with the suture, and the suture is then pulled through from above, which readily delivers the sac into the abdomen ready for ligation.

This method saves time, is absolutely safe, avoids damaging the structures constituting the femoral canal, and brings the sac exactly into the place where it is required.

London, W.1 D. H. SANDELL.

KWASHIORKOR

SIR,—I was glad to see in Professor Platt's article of Nov. 6 a confirmation of my observation [1] in Fiji that the advice to mothers to wean their babies at nine months in communities where cow's milk is not available (in slavish imitation of European practice) is a considerable factor in the production of kwashiorkor. I remember an assistant medical practitioner friend telling me an unconfirmed story of an outbreak of œdema in infants on a small Pacific island after the visit of a New Zealand sister who applied her Karitane training in an unintelligent manner.

Nairobi, Kenya. P. E. C. MANSON-BAHR.

ISOBEL CRIPPS CENTRE

Mr. Charles A. Neil, principal of the Isobel Cripps Centre, 18, Lansdowne Road, London, W.11, writes:

May I explain something about the Isobel Cripps Centre? There are a number of doctors who know the centre well, but there are others who are not fully informed about our work and recently have made somewhat misleading statements about it. Since more and more doctors are using the services of the centre—both for personal study and for their patients—it is important that the following facts should be known.

This centre is a school of self-management, not a clinic. We teach people to overcome bad habits of posture, movement, and tension, our object being, in fact, to teach them to manage themselves better. *We neither diagnose nor treat disease:* we are neither qualified to do so nor is such our function. This is made clear in our literature, in a notice appearing in our waiting-room, and at the interview with the prospective pupil.

There are two categories of pupils. Firstly there are those who come to be taught, with the object of improving their posture, movement, and ability to relax in order to do some task better—e.g., the musician who wishes to be more released, more skilful, and perhaps less exhausted by his work. There are also children and others who come to improve posture and movement for æsthetic reasons or because they appreciate that their awkward, tense behaviour is literally a disorder and they wish to overcome it. These are people who neither need nor seek medical advice.

In the second category of pupils are those who have symptoms of illness such as backache, asthma, migraine, &c., or are very "nervously tense." Some of these are advised to come by their doctors. Many, however, come directly and in such cases we write to the pupil's doctor, explaining that his patient has been to see us and stating in what way we might be able to help in the overcoming of the awkward movement and undue tension, and we ask if he has any objection to our teaching his patient in this way.

I believe that the re-educational work of the kind we do here has something of importance to offer the medical profession, as the rapidly increasing number of doctors who are taking an interest in this centre seems to confirm.

We have built up this happy coöperation with members of your profession by following strict ethical principles, by avoiding hasty and over-enthusiastic claims, and, above all, by not meddling in fields in which we are not qualified. It would be a pity if this coöperation were to be marred by avoidable misunderstanding.

1. Manson-Bahr, P. E. C. *Docum. Med. geogr. trop.* 1952, **4**, 97.

Obituary

JOHN MACLEOD HENDRIE MACLEOD

M.A. St. And., M.D. Aberd., F.R.C.P.

Dr. J. M. H. MacLeod, consulting physician for diseases of the skin to Charing Cross Hospital, died on Dec. 10 at his home at Farnham, Surrey, at the age of 84.

He was born at Galston in Ayrshire, the son of the late Dr. J. B. MacLeod, but the family soon moved to Dundee where his father became physician to the Dundee Royal Infirmary. Dr. MacLeod began his studies at the University of St. Andrews where he graduated M.A. in 1890. He then moved to the University of Aberdeen where he took the degree of M.B. in 1894. For a time he acted as assistant to the professor of physiology, and he later spent some years in postgraduate studies in Paris, Vienna, and Hamburg where he worked under Unna.

[British Journal of Dermatology

In 1898 he took his M.D. degree with honours and soon afterwards he settled in consultant practice in London. He quickly won recognition and was appointed to the staffs of Charing Cross Hospital, the Victoria Hospital for Children, and the London Hospital for Tropical Diseases. He became director of pathology at St. John's Hospital for Skin Diseases, and he also lectured on dermatology at the London School of Tropical Medicine. In 1916 he was elected F.R.C.P.

Dr. MacLeod published many articles in German and English journals, and at the beginning of this century he became editor of the *British Journal of Dermatology and Syphilis*, a position which he held for the next five years. But he did not allow this charge to interrupt his own writing, and his *Practical Handbook of the Pathology of the Skin* appeared in 1903, *Burns and their Treatment* followed in 1918, and his comprehensive *Diseases of the Skin* in 1920. He also contributed articles to several encyclopædias of medicine. He was a corresponding member of many foreign dermatological societies, including those of the United States, Denmark, France, and Japan. He was president of the London branch of the Clan MacLeod Society.

I. M. writes: "MacLeod loved companionship, and his friends rejoiced in the warmth of his hospitality, his dry humour, and the enchanting twinkle of his eyes which showed his appreciation of what was said and done.

"From all his students he expected thoroughness, clarity, and honest devotion to their profession. To those whom he encouraged to enter the specialty he was a severe taskmaster. There were no short cuts to the higher rungs of the ladder and the first few were to be the most difficult. As a pupil of P. G. Unna of Hamburg he laid particular stress on the importance of a sound knowledge of general pathology and its application to skin diseases, and his textbook, written over fifty years ago, remains a masterly tour-de-force of a hitherto little explored field. As a teacher of clinical dermatology he excelled. By bringing himself down to a level just above that of his students he unravelled the most puzzling cases and led them logically to the final diagnosis. His modesty in exposition encouraged them to follow this study with him, and he always brought home its final purpose—'having acquired a thorough knowledge of pathology, diagnosis, and therapy, don't forget the patient behind the disease.'

"His love for the profession and his patients was perhaps best expressed in his work for those with leprosy. Few knew anything of his untiring efforts for that cause, particularly in the leprosy colony in this country, of which he was for many years the senior physician and organiser. The patients were his family, and in the earlier days of inadequate treatment his successes were, I feel, mainly a measure of his devotion to the cause and the

hope which he instilled in these patients. He treated each as his own child and never forgot to inquire about their *hobbies—whether it was poultry-farming, horticulture,* or some craft, he could converse on all with authority and enthusiasm.

"An expert yachtsman and fisherman, he loved his holidays on the Broads and in Scotland. With his wife *he roamed far and wide, and his friends received vivid* pictures of his travels in his beautifully written letters."

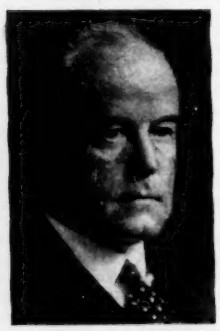
He married Eva, daughter of the late Joseph Ruston, *and she survives him with a son and a daughter.*

ALFRED BAKEWELL HOWITT

Kt., C.V.O., M.A., M.D. Camb.

Sir Alfred Howitt died in London on Dec. 8. He was born at Nottingham in 1879, the third son of the late Francis Howitt, M.D., a member of the Society of Friends. He *was educated at Epsom College, Clare College, Cambridge,* and St. Thomas's Hospital, London. A good athlete, he played rugby for Epsom and St. Thomas's and tennis for Clare College, where he acquired the nickname of "Toppy" which stuck to him for life.

After he qualified in 1905 he held house-appointments at St. Thomas's and at the West London Hospital and was resident physician at St. Thomas's Home. Later he acted as anæsthetist at St. Thomas's, but he gave up this appointment to give all his time to general practice in Belgravia.



Elliott & Fry

As chairman of the executive committee of the original Institute of Hospital Almoners, and president of the new institute after its amalgamation with the Hospital Almoners Association, and as an esquire of the Order of St. John of Jerusalem, he did much to promote the development of ancillary services in hospital treatment. He was instrumental in starting the Northcote Trust, and he was for many years treasurer of Epsom College.

In the parliamentary election of 1929 he unsuccessfully contested Preston, but in 1931 he was returned as a Conservative member for Reading, and he continued to represent this constituency until 1945, in which year he was knighted.

S. A. H. writes: "As a family doctor Howitt had great qualities, for he possessed real sympathy and a wide knowledge of human nature. His Quaker upbringing did not prevent him from having a good sense of humour, and he had his little jokes about Quaker foibles. He used to suggest that tactics could be learnt from the story of the man who, when he met a Quaker, and asked to be directed to the post office, was answered by the query 'are thee posting a letter?'

"To those who knew him intimately he was a true, trustworthy, and candid friend whose candour was only severe when occasion demanded. It may be said of him that 'he was a gentleman of active perceptive will, a reader of features, audacious at the proper moment, talking good sense and airy nonsense at discretion, a humanist but with the spirit of an armed champion behind his features, quite a London character but with the appearance of one to whom the sphinx had spoken."

In 1911 he married Dorothy Whiteley, daughter of the late Lord Marchamley. After her death he developed rheumatoid arthritis, and when the acute stage had subsided he was left seriously crippled. He is survived by three daughters, the second of whom is a doctor.

Births, Marriages, and Deaths

BIRTHS

DAVIES.—On Dec. 8, at Hammersmith Hospital, to Brenda Van Leuven, M.D., M.R.C.P., wife of Howard Davies, M.D., M.R.C.P.,—a daughter (Melanie Clare).

Notes and News

KING EDWARD'S HOSPITAL FUND FOR LONDON

PRESIDING over the general council of the Fund on Dec. 8, the Duke of Gloucester said that £400,000 would be set aside for grants to hospitals and the maintenance of advisory services and educational activities. For the next year or two special emphasis would be placed on grants in aid of hospital catering. "Much effort is made by hospital authorities to get and keep competent staff in their kitchens and dining-rooms. But the fact remains that many hospital kitchens are *still less good than they should be, and equipment which* ought to be superannuated is still in use." The work of the Fund's catering advisory service had brought to light many *defects which could be put right by modest capital outlay.* The Duke referred to the massive contribution made by Sir Edward Peacock, the treasurer, in his twenty-five years of office. He proposed to appoint Lord Ashburton as treasurer in succession to Sir Edward Peacock.

Sir Edward Peacock reported that in 1953 income from all sources had amounted to £563,000, including £200,000 from the Nuffield Trust for the Special Areas and £24,000 from *legacies. Total expenditure amounted to £505,000.* The present market value of the Fund's investments was about £7,500,000, and the income from investments was approximately £330,000. Since it began operations, the King's Fund had disbursed to hospitals, or in the interest of hospitals, over £14,000,000. Apart from ordinary income, between £9,000,000 and £10,000,000 had been received in legacies and contributions from other sources.

VISIT OF THE RUSSIAN DOCTORS

THE Russian doctors who are visiting this country at the invitation of the Society for Cultural Relations with the U.S.S.R. have this week been in Manchester, Birmingham, and Edinburgh. Six of the party went to Manchester where their plans included visits to the Royal Infirmary, St. Mary's Hospital for Women and Children, and Booth Hall Hospital. The other five visitors in Birmingham went to the Dudley Road Hospital and the Queen Elizabeth Hospital, and two of them gave lectures at the Birmingham Accident Hospital. Today the two groups are due to join forces again in Edinburgh where they will stay for three days. Last week's programme in London included visits to the Royal College of Surgeons, the Postgraduate Medical School, the Royal Free Hospital, University College Hospital, the Maudsley Hospital, the Royal National Orthopædic Hospital, and County Hall. The visitors were also taken to see the House of Commons, the National Gallery, Harlow new town, and *Macbeth* at the Old Vic. On Dec. 13 the British Medical Association held a reception in their honour. The Russians will be back in London next week and they are to visit the Royal College of Physicians on Dec. 21. We understand that they will leave for home on Dec. 24.

DEAF-BLIND CHILDREN

THE Royal National Institute for the Blind has a school for blind children with additional handicaps at Condover Hall, Shrewsbury. Three years ago, as part of this school, a small unit was started for children who were deaf as well as blind and were seemingly educable. Three children were admitted; and a fourth place was used to investigate, in turn, other deaf-blind children who were referred to the institute. Seventeen such children have been admitted, usually for five days, and assessed as to their suitability for admission to the unit when a permanent vacancy occurs.

These investigations have shown that there are many more deaf-blind children apparently capable of benefiting from training at the unit than was at first estimated. In order that the total number of such children may be ascertained, and appropriate plans made, the Royal National Institute for the Blind (224, Great Portland Street, London, W.1) is seeking information on all known deaf-blind children who might be educable.

GENERAL MEDICAL COUNCIL

Dr. Arthur Wright Scott Webster, whose name the registrar of the General Medical Council was directed to erase from the Medical Register after a hearing by the Medical Disciplinary Committee in July,[1] has withdrawn an appeal to the Judicial Committee of the Privy Council.

1. See *Lancet*, July 24, 1954 p 181.

HOSPITAL ENDOWMENTS FUND

UNDER the National Health Service Act of 1946, the Hospital Endowments Fund was constituted in 1948 by transfer to the Minister of Health of the endowments of former non-teaching voluntary and local-authority hospitals. The latest account [1] shows that in 1953–54 distributions to regional hospital boards and hospital management committees amounted to 28*s.* per bed. The transferred liabilities which have been met by the Minister from the fund amount to £11,600,000. When the transfer of assets has been completed the fund is expected to total some £31,600,000. No part of the capital has so far been transferred to boards and committees.

HEALTH IN SINGAPORE

IN 1948 the Government of Singapore decided to double its medical and public-health facilities, and the director of medical services, Singapore, confirms in his report for 1953 [1] that many of the proposed projects have now been completed. The population of the Colony has continued to increase dramatically, and the 1953 total of 54,562 live births (a crude rate of 48·68 per 1000) is the highest yet recorded. In the overcrowded and often insalubrious tenements in which the native population lives, domiciliary midwifery as practised in Britain is out of the question; and there are still too few hospital maternity beds, and not nearly enough fully trained nurses. Even so, some 18,000 women were delivered last year at the Singapore Maternity Hospital (which has only 200 beds) and more than half the 15,000 deliveries in rural areas were conducted under expert supervision. The comparatively low maternal-mortality rate (1·2 per 1000) and infant-mortality rate (67·04 per 1000) testify to the skill and enthusiasm of the hard-pressed doctors and midwives in this distant corner of the Commonwealth.

A FILM ON MENTAL NURSING

How are we to attract more young women and men into the nursing of the mentally sick? By showing them, the North West Metropolitan Regional Hospital Board believe, the truth about mental nursing. In a courageous little documentary film, *The Troubled Mind*, they have stated the facts about this kind of work, its pains, its pleasures, and its rewards.

The new nurse is sensitive and frightened. She finds herself in a modern hospital—Shenley was used for this film—with open gates and lovely grounds. She walks through the sunny garden with another nurse and hears a patient practising the violin in the chapel. All is serene and reassuring until the music suddenly becomes broken and wild, and they find the patient agitated and in tears. Later the young nurse attends this patient while she has electroconvulsive treatment: is it perhaps a mistake to show the disturbed face of the nurse while the fit is in progress? This must have been a very hard point to decide. To show a convulsion would, of course, have been quite unsuitable in a film intended for the general public. On the other hand the nurse's look of distress seems to hint at something worse than the fact. The difficulty might have been overcome by showing the patient wakening, calm and forgetful of the whole episode. Later sequences do, in fact, show her recovered; and on leaving the hospital she remarks that she can remember little of that time. Her thanks, at parting, reveal to the young nurse how much share she herself has had in making that recovery possible.

But this patient is, of course, only one among many the nurse encounters, and the film is honest in showing her in a ward of much-disturbed patients, where her initial alarm is exorcised by the kindly, cheerful, and matter-of-fact behaviour of the sister. The social side of mental-hospital life—the dances, the tennis, the friendly give and take between the nurses and medical staff and students, is glanced at, but not given disproportionate weight: no young girl who thought of entering mental nursing as a result of seeing this film could feel that her hopes of a gay social life had been unduly raised. The nurse's growing confidence is suggested in a final sequence where—as competently as a mother averting the tears of a four-year-old—she steers an octogenarian patient out of a fit of despondency. So true to reality is the whole short film that watchers are disquieted by the thought that these must, in fact, be genuine patients: no actors could so truthfully portray the symptoms of the troubled mind. A final caption relieves this anxiety: no real patients appear; and though the young nurse and the octogenarian are played by professionals the skilled presentment of mental illness is done entirely by members of the staff of Shenley—a most remarkable achievement.

It is a pity that there was no way of conveying the impression which so many newcomers to a mental hospital find rising to their lips as they look round: "But these are normal people!" It is suggested, however, by many incidents in the film, and especially by the scene in which a roomful of people assert emphatically that no-one has sent them into hospital—they came of their own accord.

Will such a film prove too disquieting to be shown to young girls? It is hard to say. Young girls are more capable of facing distressing facts than most of their elders recall or believe. Parents, in fact, may find this film more painful than do their children. But if an honest statement can win recruits this film deserves to bring in a host of them. We wish it luck, and warmly congratulate the North West Metropolitan Regional Hospital Board on their enterprise.

GAIT

THIS is the title of an excellent new film which shows how walking may be disturbed by lesions in the muscles and at various levels in the nervous system. The level of the lesion is shown on a diagram, and the resulting gait is then demonstrated both by shots of an affected patient walking and by shots of his feet taken from below a glass sheet. Lesions in the sensory pathway and the cerebellar system and the effects of abnormal movements are also included, and there is a demonstration of how to elicit the physical signs in the differential diagnosis of these conditions. Made in collaboration with the National Hospital for Nervous Diseases, the film is particularly suitable for students taking an introductory course before they start their clinical years, for the emphasis is on anatomy and physiology, and the names of the diseases responsible are not mentioned. The film is 16 mm. with sound and colour, and it runs for 34 minutes. It is available free from the I.C.I. Film Library.

University of London

At a recent examination for the diploma in psychological medicine the following were successful:

Valerie A. Cowie, I. J. MacDonald, *M. I. M. Pines.

* Distinction.

University of Manchester

The following have passed the final examination for the degrees of M.B., CH.B.:

N. M. Bailey, J. T. Binless, M. A. Bloomfield, Margaret A. E. Boyce, J. D. Bradshaw, J. J. Burke, R. A. Butler, Alison M. Carrie, D. F. G. Clegg, Jean C. M. Collins, K. M. Dickinson, H. E. Godfrey, H. L. Green, S. F. Greenwood, G. E. B. Grove, Jane Hargreaves, I. S. Ingleby, Gwyneth M. Jones, J. D. Knight, Peter Lomax, Jeffery Potter, Margaret J. Pybus, Ian Ramage, Eric Roditi, Ronald Schofield, Betty West, G. A. Willcock, D. B. Wooldridge.

University of Glasgow

Dr. A. C. Forrester has been appointed to the senior lectureship in anæsthetics at the Royal Infirmary, and Dr. R. C. Macleod to the lectureship in epidemiology (infectious diseases).

National University of Ireland

University College, Cork.—Dr. Maurice FitzGerald has been appointed lecturer in anatomy and Dr. John Magner lecturer in pathology.

British Association of Otolaryngologists

At a meeting of this association on Dec. 3, the following were elected officers for 1954–55:

President, Mr. I. Simson Hall; immediate past president, Mr. V. E. Negus; vice-president, Mr. C. Gill-Carey; hon. treasurer, Mr. J. C. Hogg; hon. secretary, Mr. Myles L. Formby.

Royal College of Physicians of Ireland

On Dec. 3 the following were admitted licentiates in medicine and midwifery of the college:

Peter Barnes, I. D. Bosman, P. J. Browne, I. W. Browne, P. J. Campbell, Daniel Eloff, A. A. Endelman, Ved Brat Gautama, J. W. D. Hand, R. J. Hayes, D. P. McCarthy, W. F. McCourt, Badrudeen Gulamhusain Nanji, Anne T. Nolan, B. M. Nolan, M. C. Ongley, D. E. Page, E. G. K. Quarcoo, G. I. Roberts, Shyam Krishna Roy, A. P. Ryan, W. T. Salmon, T. A. Scully, Sydney Sugerman, N. H. L. Webb.

1. Hospital Endowments Fund: Account 1953–54. H.M. Stationery Office. Pp. 11. 6*d.*
2. Colony of Singapore. Medical Department, Annual Report, 1953. Obtainable from Government Publications Bureau, General Post Office, Fullerton Buildings, Singapore. Pp. 263. $3.

Royal College of Surgeons of England

At a meeting of the council on Dec. 9, with Sir Harry Platt, the president, in the chair, Mr. Bryan McFarland (Liverpool) was appointed Robert Jones lecturer for 1955. The Hallett prize was awarded to Rasamay Ganguly (Calcutta).

The following diplomas were granted:

Fellowship.—Richard Kelvin, R. W. L. Calderwood, †J. W. T. Dixon, B. H. Brock, I. S. M. Jones, †Peter Timmis, K. L. Williams, †H. B. Juby, †C. W. Smith, R. H. P. Oliver, J. D. Griffiths, N. A. Green, N. A. J. Niles, D. N. Walder, J. McK. Duncan, Harry Segal, I. McN. Smith, Mahmoud Abdel-Razek, A. C. Akehurst, A. M. Beech, D. T. Beetham, *Saw Taik Leong, W. R. Probert, E. L. Ryan, Bishambhar Nath Baijal, Roshdy Habib, W. J. Morris, P. R. Reddy, J. F. Shaw, John Candy, Prakash Chandra, Peter Gibson, I. J. Gordon, *A. J. Ogg, A. G. Pollen, D. I. Roberts, *John Whitwell, W. A. Anderson, Kandappa Arumugam, G. T. F. Braddock, Ajit Kumar Ghosh, James Kyle, J. P. O'B. McMullin, B. G. Peet, D. E. H. Phillips, J. A. Turner, Onkar Nath Vyas, J. H. B. Yule, Narayan Dattadayal Bhiwapurkar, I. W. Broomhead, J. E. F. Coolican, H. R. England, J. M. Foreman, D. W. Low, P. J. Ryan, Gajendra Sinh, A. B. Alder, Dogdo Sohrab Bamji, A. A. Belton, F. G. O. Burrows, Burjorji Nusserwanji Colabawalla, F. T. Crossling, Elia Dayan, I. L. Evans, M. C. Gilbert, J. C. Gillman, G. E. Heard, L. L. Hoare, J. L. C. Lahz, Lena E. McEwan, A. T. Matheson, D. de G. Villet, J. L. Williams, Anthony Gabriel, D. A. A. Lane, D. J. Murphy, †A. J. Seeley, G. C. Staniland, Noel Thompson, †J. P. Tonkin, R. I. H. Welsh, E. J. C. Wynne, M. V. Braimbridge, Prakash Chandra Dubey, J. E. Garson, R. I. Mitchell, Asit Kumar Mitra, E. G. Perry.

* In ophthalmology.
† In otolaryngology.

Membership.—R. C. Giles, D. M. Mahabir.

Fellowship of the faculty of anæsthetists.—E. T. Thomas, E. T. Mathews, P. J. Nobes, Shaikh Abdur Rahaman, R. S. Gillinson, D. D. Hamlyn, N. M. Cass, D. D. B. Morris, F. W. Oliver, Rosemary A. Faull, Margaret N. Barr.

The following diplomas were granted jointly with the Royal College of Physicians:

D.C.H.—R. S. Bull.

D.Path.—S. S. Epstein, Monojmohan Roy, Alexander Swan, J. W. Weston.

D.M.R.-T.—C. F. Baxter, Savas Bissyllas, K. N. H. Low, Helen M. Mellor.

D.M.R.-D.—Habib Abdalla, J. M. Allcock, J. S. Boyd-Wilson, Purnendu Sekhar Brahma, Russell Branster, I. McC. Carmichael, P. H. Coldwell, R. V. Dan, Mohanlal Gopalji Desai, P. D. De Villiers, W. W. Frank, Isaac Friedman, F. S. Grebbel, Isabella Grey-Thomas, K. H. Harper, Neville Kaplan, Chadalavada Krishna Rao, E. W. Moore, Mary G. Murphy, M. N. Phillips, S. K. B. Ray, Basil Rosenberg, B. B. Roy, Helen Sender, J. G. Sowerbutts, J. H. Stewart, J. V. Todes.

D.T.M. & H.—Abu Mohammad Mustaqul Huq, G. L. Ritchie.

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the faculty on Dec. 6, with Prof. Stanley Graham, the president, in the chair, the following were admitted fellows of faculty:

T. B. Begg, James Buchanan, R. A. Caldwell, Peter Hay, N. McE. Lamont, A. M. Mechie, Ramaswamy Vasudave.

Royal Veterinary College

Prof. R. E. Glover, F.R.C.V.S., has been appointed principal and dean of the college in succession to the late Prof. J. B. Buxton.

N.O.T.B. Dinner

On Dec. 10 the National Ophthalmic Treatment Board held a silver jubilee dinner at the Dorchester Hotel. Proposing The Association, Dr. E. A. Gregg, chairman of council of the British Medical Association, said that it deserved the whole-hearted support of the medical profession and the community, since too much attention, knowledge, and skill could not be expended on care of the eyes; and he hoped the time would soon come when "eye-care rather than eye-glasses" would be available to all. One doctor had confessed that the only thing he could diagnose with an ophthalmoscope was halitosis; and certainly "flashing instruments with a hole at the end," although impressive, were less important in ophthalmology than careful examination of the whole patient. Replying, Mr. O. Gayer Morgan, vice-chairman of the association, emphasised its filial relationship to the B.M.A.; so far, he added, they had not brought down the parental wrath once. The association's object was to spread the gospel of "eye examinations for everyone," and to show that doctors and laymen could unite to form a voluntary service which was "efficient, valuable, and ethically correct." Mr. A. W. Hawes proposed The Guests, and Lord Crook responded. Referring to the Crook Report, he expressed regret that no reference had been made in the recent Speech from the Throne to the proposals made by the committee of which he was chairman; but he was confident that the Government would soon realise that the measures recommended were in fact inevitable.

National Institute for Medical Research

The Duke of Edinburgh visited this institute on Dec. 9. At Mill Hill, after a talk with Sir Charles Harington, F.R.S., the director, he was conducted round the various divisions: bacteriology and virus research (which includes the World Influenza Centre), biological standards, experimental biology, physical chemistry, chemotherapy (biological), chemotherapy (chemical), and biophysics and optics. The visit ended at the Hampstead laboratories of the Medical Research Council, which accommodate the division of human physiology and the environmental hygiene research unit. The environmental hygiene research unit is to study the effect of moderate to high temperatures in two chambers: (1) a radiant-heat laboratory, in which the temperatures of walls, ceiling, and floor can be accurately controlled and raised above or below the air temperature, which can, in turn, be between 40° and 120°F; and (2) a wind tunnel, in which the air movement can be controlled between about 50 ft. and 1000 ft. a minute, and the air temperature and humidity controlled between the limits of 40° and 120°F. The division of human physiology is to investigate the effects of low temperature (including studies on acclimatisation, cold injury, and protective clothing) in the following two chambers: (1) a room in which the air movement will be kept low (about 30–40 ft. per minute) the air temperature can be controlled from −40° to +70°F, and the humidity of the air can also be controlled; and (2) a low-temperature wind tunnel, in which air movements can range from 50 ft. to 2000 ft. per minute, and temperature and humidity will be controlled between the same limits as in the still-air room. Each of these chambers contains a treadmill.

Royal Society

Sir Alan Drury, F.R.C.P., and Prof. J. H. Gaddum, SC.D., M.R.C.S., have been elected to the council of the society.

Society of Apothecaries of London

Gillson Scholarship.—This triennial research scholarship (£500) falls to be awarded in 1955. It is open to licentiates or freemen of the Society under 35 years of age. Further particulars may be had from the registrar, Black Friars Lane, E.C.4.

Mr. E. H. Hurst, F.H.A., has been seconded from his post as secretary of the Portsmouth group hospital management committee to advise the Ceylon government under the Colombo Plan on the setting up of a health service.

The British Standards Institution has issued draft standards for mercury sphygmomanometers and for aneroid sphygmomanometers. Comments on the draft specifications should be submitted before Jan. 26 to the secretary of technical committee SGC/10, British Standards Institution, 2, Park Street, London, W.1.

Diary of the Week

DEC. 19 TO 25

Monday, 20th

MANCHESTER MEDICAL SOCIETY
9 P.M. (Medical School, Manchester.) *General Practice.* Mr. W. Sayle-Creer: Foot Faults Related to Form and Function. (Film.)

Tuesday, 21st

INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5.30 P.M. Dr. G. B. Dowling: Tuberculosis of the Skin.

Wednesday, 22nd

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. H. Haber: Specific and Foreign Body Granulomas of the Skin.

Thursday, 23rd

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. J. O. Oliver: Bacteriology of Tuberculosis Cutis.

Appointments

COPLAND, MARGARET McN., M.A., M.B. Aberd.: asst. M.O., maternity and child welfare, county of Durham.

COTTON, J. L., M.B. Manc., D.P.H.: M.O.H., Northallerton urban district council, and the Aysgarth, Leyburn, Masham, and Northallerton rural district councils, and asst. county M.O., Yorkshire.

DEVEY, G. F., M.B. Birm.: asst. M.O., Flintshire.

JONES, E. WYN, M.D. Lpool, F.R.C.P.: part-time senior consultant physician, regional cardiological service, Liverpool R.H.B.

ROSS, R. M., M.B. Edin., D.P.H.: M.O.H., principal school M.O., and chief welfare officer, Dudley.

SHARP, WILLIAM, M.B. Leeds, D.P.M.: medical superintendent, Greaves Hall Mental Deficiency Institution, Banks, near Southport, Lancashire.

URQUHART, MARGARET McR., M.B. Aberd.: asst. M.O., north-west Kent.

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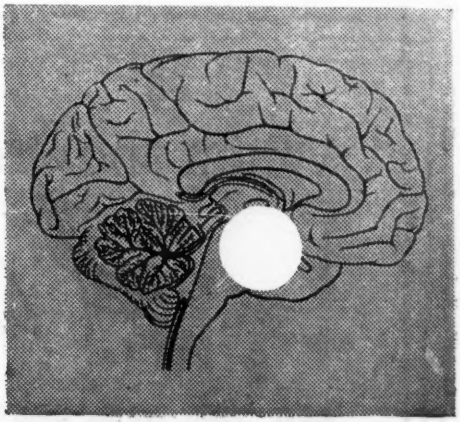

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The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S. hospital posts we advertise, unless otherwise stated. Canvassing disqualifies, but candidates may normally visit the hospital by appointment.

Academic and Educational

FACULTY OF ANÆSTHETISTS

ROYAL COLLEGE OF SURGEONS OF ENGLAND
BOARD OF FACULTY ELECTION

Notice is hereby given that an election of 3 Fellows and 2 Members of the Faculty into the Board will take place at the College on WEDNESDAY, 16TH MARCH, 1955, at 3.30 P.M. in the vacancies occasioned by the retirement in rotation of Dr. K. G. Lloyd-Williams, Dr. B. L. S. Murtagh and Dr. Vernon F. Hall, representing the Fellows, and Dr. A. J. W. Beard, representing the Members of the Faculty. The following shall be eligible for election to the Board on complying with the conditions of the Regulations :—

(*a*) All Fellows of the Faculty of Anæsthetists for the 3 vacancies for Fellows on the Board.

(*b*) All Members of the Faculty of Anæsthetists for the 2 vacancies for Members on the Board.

Application forms of the requisite Notice to be signed by the candidate and his Nominees may be obtained on application to me, and must be received by me duly completed by 7th January, 1955.

The names of the candidates will be published in the London Gazette and the Medical Journals, on or about Friday, 21st January, 1955. A voting paper will be sent by post to each Fellow and Member, whose address is registered at the College, on Friday, 21st January, 1955. Fellows and Members are requested to give notice, without delay, of any change of address, so that their voting papers may not be misdirected.

W. F. DAVIS, Secretary.

Lincoln's Inn-fields, London, W.C.2.

UNIVERSITY OF LONDON

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
(Incorporating the teaching facilities of Queen Charlotte's Maternity Hospital, Chelsea Hospital for Women and the Department of Obstetrics and Gynæcology at Hammersmith Hospital)

Applications are invited from graduates with a registrable qualification for enrolment for the SPRING TERM (7TH MARCH–4TH JUNE, 1955). Graduates attend each of the constituent hospitals in turn for clinical work, and attend lectures and special demonstrations at all 3 hospitals. Enrolment fee £3. Tuition fee £36 a term.

General practitioners wishing further experience in obstetrics may be accepted to attend the course at Queen Charlotte's Maternity Hospital for shorter periods—i.e., 2–4 weeks. They will be allowed to do normal deliveries and will have the opportunity of attending the combined classes of lectures and demonstrations at the 3 hospitals of the Institute. Ministry of Health grants are payable to approved general practitioners attending for a period of 2 weeks.

During the winter vacation, graduates may attend the practice of the hospital. Fee £1 per week.

A Refresher Course for General Practitioners will be held from 28th February to 5th March, 1955.

Hostel accommodation is available at Queen Charlotte's Hospital and at Hammersmith Hospital.

Further particulars can be obtained from the Secretary, Institute of Obstetrics and Gynæcology, Chelsea Hospital for Women, Dovehouse-street, London.

UNIVERSITY OF OXFORD

NUFFIELD GRADUATE ASSISTANT IN PATHOLOGY

Applications are invited for the post of Graduate Assistant in the Department of Pathology, Radcliffe Infirmary, Oxford. The successful applicant will have opportunities for research in addition to taking part in the hospital work of the various laboratories. Salary range £600–£1300 p.a., according to experience and qualifications, plus F.S.S.U. and children's allowances. The salary will be increased in any general revision of university salaries.

Applications, together with the names of 2 referees, should be submitted not later than 15th January, 1955, to Dr. A. H. T. ROBB-SMITH, Department of Pathology, The Radcliffe Infirmary, Oxford.

THE LONDON HOSPITAL MEDICAL COLLEGE

COURSES IN ADVANCED SURGERY

An evening Postgraduate Course in Surgery for the Final Examination of the F.R.C.S. will be held at the London Hospital from 14TH MARCH to 25TH APRIL, 1955. The Course will be held on MONDAY and WEDNESDAY evenings from 6.30 P.M. to 8.30 P.M. with the exception of Monday, 11th April, and will be limited to 18 students.

Applications should be made to the Dean, from whom further particulars can be obtained. The fee for External candidates will be 16 guineas and for "Old Londoners" 10 guineas.

H. B. MAY, M.D., F.R.C.P., The Dean,
The London Hospital Medical College.

Turner-street, E.1.

INSTITUTE OF NEUROLOGY (Queen-square)

(The National Hospital, Queen-square, and The Hospital for Nervous Diseases, Maida Vale)

A FULL-TIME COURSE IN CLINICAL NEUROLOGY will be held at The National Hospital, Queen-square, for 10 weeks beginning on 3RD JANUARY, 1955, consisting of lectures and demonstrations in medical neurology, anatomy and physiology of the nervous system, methods of examination, neuro-pathology and psychology.

The lectures are given at NOON and 2 P.M. daily and arrangements can be made for students to attend these without entering for the full course.

Applications should be made, in writing, to The Dean, Institute of Neurology (Queen-square), The National Hospital, Queen-square, W.C.1.

INSTITUTE OF NEUROLOGY (Queen-square)

2 COURSES OF CLINICAL DEMONSTRATIONS, open to Postgraduates will be held at The National Hospital, Queen-square, on WEDNESDAYS at 4 P.M. from 5TH JANUARY to 16TH MARCH, 1955, inclusive, and on SATURDAYS at 10.30 A.M. from 8TH JANUARY to 19TH MARCH, 1955, inclusive.

The fee for attending either of these courses is 1 guinea.

Application for a ticket should be made to the Dean, Institute of Neurology (Queen-square), The National Hospital, Queen-square, W.C.1, and a remittance to cover the fee enclosed. Only postal applications will be considered.

ST. BARTHOLOMEW'S HOSPITAL MEDICAL COLLEGE

FINAL F.R.C.S.—FEBRUARY, 1955

A course will be held for the above examination on Tuesday and Thursday evenings at 6.30 P.M. starting on THURSDAY, 24TH FEBRUARY until TUESDAY, 26TH APRIL. There will be a break for Easter.

The course will consist of 16 clinical tutorial classes with short cases, followed by lecture-demonstrations on selected subjects. The course is not comprehensive. The class will be limited to 24 members.

Fee : 20 guineas, or to Barts men 15 guineas.

Applications to the Sub-Dean, St. Bartholomew's Hospital Medical College, West Smithfield, E.C.1.

THE ROYAL LONDON HOMŒOPATHIC HOSPITAL

Great Ormond-street and Queen-square, London, W.C.1

COURSES OF INSTRUCTION IN THE PRINCIPLES AND PRACTICE OF HOMŒOPATHY for Medical Practitioners and Senior Students of Medicine.

WINTER COURSE

These Lectures, which commence on FRIDAY, 7TH JANUARY, at 2.30 P.M. are given under the auspices of the Homœopathic Research and Educational Trust and deal with the subjects required for examination for the Diploma of Membership of the Faculty of Homœopathy. Fee for registered medical practitioners £10 10s. per session. Medical students admitted without charge.

Full particulars can be obtained on application to the Dean of The Education Course at the Hospital.

ELECTRO-ENCEPHALOGRAPHY

A course for Postgraduates in the technique and clinical application of Electro-encephalography will be held jointly at the Institutes of Psychiatry and Neurology from 3RD JANUARY to 11TH MARCH, 1955.

For further particulars apply to the Dean, Institute of Psychiatry, Maudsley Hospital, Denmark-hill, S.E.5, or the Dean, Institute of Neurology (Queen-square), The National Hospital, Queen-square, W.C.1.

HENRY AND CHARLOTTE PAYNE RESEARCH FELLOWSHIP

Applications are invited by the Council of the Royal Society for a Henry and Charlotte Payne Research Fellowship in cytology and/or cyto-chemistry with special reference to malignant cells. The Fellowship is tenable in any university, hospital or medical school in the United Kingdom or at any other place approved by the Council of the Royal Society. The appointment will be for 2 years in the first instance, from 1st April, 1955, and may be renewed annually up to a total of 5 years. It will be subject to the conditions governing Royal Society Research Appointments. The stipend will be £1000 p.a. with an annual increment of £50 and with superannuation benefits to which the successful candidate will be required to contribute 5% of annual stipend and to which the Society will contribute a sum equivalent to 10% of the annual stipend.

Applications should be made on forms to be obtained from the Assistant Secretary, The Royal Society, Burlington House, London, W.1, and should be received as early as possible, in any case not later than 1st February, 1955.

THE UNIVERSITY OF MANCHESTER. The post of CHIEF TECHNICIAN in the Department of Pathology is vacant. Applicants should be Fellows or Associates (in Pathological Technique) of the I.M.L.T. Salary in accordance with the University's scales for Chief Technicians—i.e., £580–£20–£660 p.a.

Applications, with full particulars and names of 3 referees, should be sent to the Professor of Pathology, The Clinical Sciences Building, York-place, Manchester, 13.

UNIVERSITY OF OTAGO, Dunedin. OTAGO HOSPITAL BOARD, DUNEDIN. Full-time ASSISTANT AND LECTURER (Junior Specialist grade), Department of Obstetrics and Gynæcology. Applications are invited for the above position from those who hold a degree in medicine of an approved University, and who hold in addition the M.R.C.O.G. The position is designated as that of a Junior Specialist under the Hospital Employment (Medical Officers) Regulations 1952, Amendment No. 1 : Salary scale £1290–£1590 p.a. (plus cost-of-living bonus of £62 12s. p.a.) by annual increments of £50. Commencing rate of salary within the scale according to qualifications and experience, as determined by the Medical Officers Salaries Grading Committee of the Department of Health. Duties will include teaching of obstetrics and gynæcology to medical undergraduates, research, and clinical work in the Dunedin Hospital. The position is a non-resident one.

Applications for this position, made on the prescribed form, stating age, qualifications and experience, together with testimonials, references, health and radiological certificates, will be received by the undersigned up to 10 A.M. on Thursday, 20th January, 1955. Forms of application and conditions of appointment may be obtained from the undersigned, or from the Office of the High Commissioner for New Zealand, 415, Strand, London.

W. A. WILLIAMSON, Secretary.

Otago Hospital Board, P.O. Box 946, Dunedin, N.Z.

GUY'S HOSPITAL MEDICAL SCHOOL. Applications are invited for the post of LECTURER in the Department of Bacteriology. Candidates should be medically qualified, and preference will be given to those with an Honours Degree in a basic medical science. The seniority of the post will depend on the qualifications and experience of the person appointed; salary within the range for Junior and Senior Lecturers, with superannuation and family allowance.

Application should be made by 8th January, 1955, on a form obtainable from the Dean, Guy's Hospital Medical School, London Bridge, S.E.1.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.5. Applications are invited for the post of Full-time TUTOR IN SURGERY in the Medical School following the appointment of the present holder to a Consultant post. Applicants should be of Senior Registrar or equivalent grade. Salary range at present £1250–£1750 with superannuation and family allowances. Further particulars may be obtained from the Secretary of the Medical School.

Applications (6 copies) by 15th January, 1955.

Hospital Services : Senior Appointments

CHARING CROSS HOSPITAL, W.C.2. Part-time ASSISTANT SURGEON (Consultant). 4 sessions per week. Applicants should be General Surgeons with special training and experience in thoracic surgery.

Candidates, who must be Fellows of the Royal College of Surgeons of England, should submit 12 copies of their applications, stating date of birth, qualifications and experience, and the names of 3 referees, to reach the undersigned by 24th January, 1955. FRANK HART, Secretary to the Board.

GUY'S HOSPITAL, S.E.1. The Board of Governors invites applications for the appointment of an ASSISTANT PHYSICIAN in the Neurological Department of Guy's Hospital. Attendance will be required at Guy's Hospital for 4 sessions each week, and at Guy's-Maudsley Neurosurgical Unit at the Maudsley Hospital once each fortnight. The appointment is of Consultant status and applicants are required to hold higher qualifications.

Applications (1 copy), together with the names of 3 referees, should be submitted to reach the Superintendent, Guy's Hospital, S.E.1, not later than 31st December, 1954. In accordance with Statutory Instrument No. 1259 of the National Health Service Regulations, canvassing members of the Board or Advisory Appointments Committee will lead to disqualification.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) ASSISTANT ORTHOPÆDIC SURGEON (whole-time), Whittington Hospital (1314 Beds). This is a busy Hospital with a large volume of orthopædic and traumatic surgery for which 60 beds are reserved. Salary scale £1500 (unless below age 32)—£1950.

Applications by 18th January, 1955.

(2) CONSULTANT E.N.T. SURGEON (part-time, 2 or 3 sessions a week) St. Charles' Hospital, W.9 (593 Beds).

Applications by 20th January 1955.

Hospitals may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, London, W.1. Applications are invited for the part-time appointment of CONSULTANT ORTHOPÆDIC SURGEON. This will be for a minimum of 5 sessions, a maximum of 9. Further details concerning the appointment may be obtained from the House Governor. 1 of the duties of the successful applicant will be to organise and direct the new Accident Service at the Country Hospital, Stanmore; he will be required to live within a radius of 5 miles.

Applications, stating nationality, date of birth, qualifications, with dates and details of present and previous appointments, together with names of 3 referees, to be sent to the House Governor not later than 1st January, 1955.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry

Part-time CONSULTANT ORTHOPÆDIC SURGEON (9 notional half-days weekly), including appointment as Director of Clinical Studies and Research. Wide experience in orthopædic and traumatic surgery and aptitude for under- and post-graduate teaching, clinical and academic research essential. Residence near Hospital and attachment to accessible University Department of Orthopædic Surgery essential.

Dudley and Stourbridge Group of hospitals

Part-time CONSULTANT ANÆSTHETIST (8 notional half-days weekly). Duties at Wordsley Hospital (372 Beds) (6 notional half-days weekly) and Corbett Hospital (106 Beds) (2 notional half-days weekly). Experience specialty essential.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 3rd January, 1955.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. CONSULTANT PSYCHIATRIST/MEDICAL SUPERINTENDENT for Mental Deficiency Service in Western half of the Region. Whole-time appointment. In addition to duties as Medical Superintendent at Risbridge Hospital, Kedington (285 Beds) and Riversfield Home, St. Neots (25 Beds), there will be consultative work at child psychiatric clinics. House available at Risbridge Hospital.

Applications (8 copies), stating age, experience and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 27th December, 1954. Candidates invited to visit Hospital by direct arrangement with Medical Superintendent, Risbridge Hospital.

EAST ANGLIAN REGIONAL HOSPITAL BOARD.

(1) ASSISTANT ANÆSTHETIST (whole-time), Norfolk and Norwich Hospital Group. Higher qualification and wide experience necessary. Salary scale £1500–£1950. Candidates invited to visit hospitals concerned by direct arrangement with Hospital Management Committee Secretary, Norfolk and Norwich Hospital, Norwich.

(2) ASSISTANT PSYCHIATRIST, Little Plumstead (near Norwich). Mental Deficiency Group of hospitals and Child Psychiatry Service. The Group (900 Beds), which is progressive and the centre for much outpatient work including child guidance clinics, is recognised as a training centre for the D.P.M. by the Conjoint Board and the R.M.P.A. The building of a number of new villas is well advanced. House available. Salary scale £1500–£1950. Candidates invited to visit Hospital by direct arrangement with Medical Superintendent.

(3) ASSISTANT RADIOLOGIST (whole-time) at hospitals in the Peterborough and Stamford Area. Duties mainly at Peterborough Memorial Hospital, where there is a new and fully equipped X-ray Department. Wide experience and higher qualification necessary. Salary scale £1500–£1950. Candidates invited to visit hospitals concerned by direct arrangement with Hospital Management Committee Secretary, Memorial Hospital, Peterborough.

Applications (8 copies), stating age, experience, and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 27th December, 1954.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. ASSISTANT SENIOR MEDICAL OFFICER on the staff of the Senior Administrative Medical Officer at Board's headquarters. Duties in connection with organisation and planning of Hospital and Specialist Services in the Region. Previous experience of medical administration in the hospital and/or Health Service an advantage. Salary £1500–£1900. The appointment is subject to the provisions of the National Health Service superannuation regulations, and to the conditions of service approved by the Minister of Health.

Applications, stating age, experience and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 27th December, 1954.

LIVERPOOL REGIONAL HOSPITAL BOARD. Chester GROUP. Applications are invited for the post of Whole-time SENIOR CASUALTY OFFICER in the above Group with duties mainly at Chester Royal Infirmary and Ellesmere Port and District Hospital. Applicants should possess a higher qualification in surgery and the successful candidate will be required to take charge of the Casualty Departments and work under the general supervision of the Consultant Surgeons and Orthopædic Surgeons in the Group. The appointment will be for a period not exceeding 4 years. Salary within the range £1500–£50–£1950 for candidates of 32 years and over, and £1400–£50–£1950 for candidates aged 30 years or less.

Forms of application from, and to be returned to, Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be received not later than 8th January, 1955.

VINCENT COLLINGE, Secretary to the Board.

LIVERPOOL REGIONAL HOSPITAL BOARD. Chester AND WIRRAL AREAS. Applications are invited for the post of Part-time CONSULTANT ANÆSTHETIST giving 8 notional half-days weekly to hospitals in the Chester and Wirral Areas. Candidates should have had at least 5 years recognised training and experience in anæsthesia and should be Fellows of the Faculty of Anæsthetists or possess a 2-part Diploma in Anæsthesia.

Forms of application from, and to be returned to, Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be received not later than 8th January, 1955.

VINCENT COLLINGE, Secretary to the Board.

NORTH GLOUCESTERSHIRE CLINICAL AREA, South-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the appointment of CONSULTANT PHYSICIAN to the North Gloucestershire Clinical Area which comprises Gloucester, Cheltenham, Stroud, Forest of Dean and adjoining districts. The appointment will be held on a maximum (9 sessions) basis. The successful candidate will have charge of beds at the Gloucestershire Royal Hospital, Gloucester, and will be required to visit other hospitals in the Clinical Area as determined by the Regional Board from time to time. The duties will include outpatient clinics in rheumatology and administrative responsibility for the Physiotherapy Service.

Applications (12 copies), stating date of birth, qualifications and experience together with 12 copies of 2 testimonials, and the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 8th January, 1955.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. A vacancy exists in East Kent for maximum part-time service in Venereology and Dermatology. The post carries CONSULTANT status in both specialties; the work is solely venereological in the Isle of Thanet and Canterbury Groups of hospitals for 2 notional half-days each, weekly; the remaining 5 notional half-days are for clinics in both specialties in the South-East Kent Group. Considerable experience in both specialties is necessary and candidates should possess a higher qualification. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Apply, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 1st January, 1955.

MANCHESTER REGIONAL HOSPITAL BOARD.

(*a*) Whole-time CONSULTANT PHYSICIAN (geriatrics) to the Blackburn and District Hospital Centre, mainly at Queen's Park Hospital, Blackburn. Good experience in general medicine and special interest and experience in the treatment and rehabilitation of the chronic sick and higher qualifications essential. Appointee required to undertake the domiciliary investigation of patients and establish close liaison with general practitioners and local health authorities. 5th January, 1955.

(*b*) Whole-time NON-RESIDENT ASSISTANT RADIOLOGIST (Senior Hospital Medical Officer) to the Bolton and District Hospitals (Bolton Royal Infirmary, Bolton District General Hospital, &c.). Wide experience of diagnostic radiology and D.M.R.D. essential. 29th December, 1954.

(*c*) Whole-time NON-RESIDENT ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer) to the Ashton, Hyde and Glossop Hospitals, near Manchester. Appointee will work under general guidance of Consultant and must live in or near Ashton. Higher qualification in anæsthetics desirable. 30th December, 1954.

(*d*) 2 Whole-time RESIDENT ASSISTANT PSYCHIATRISTS (Senior Hospital Medical Officer), 1 at Whittingham Hospital, near Preston (3000 Beds), the other at Lancaster Moor Hospital, near Lancaster (2500 Beds). Good accommodation (married or single). Candidates should have had considerable experience in psychiatry; D.P.M. desirable. 7th January, 1955.

(*e*) 2 Whole-time NON-RESIDENT SENIOR CASUALTY OFFICERS :—

(i) Burnley and District Hospitals, main duties at Victoria Hospital, Burnley.

(ii) Stockport and Buxton Hospitals, mainly at Stockport Infirmary.

Special experience required in the treatment of orthopædic cases, fractures and trauma. Appointees will assist the Consultant Orthopædic Surgeons and also have special responsibilities in the casualty and traumatic (including fracture) clinics, subject to general supervision of the Consultants. Salary within range £1500–£50–£1950 (according to experience, &c.). A higher qualification desirable. Tenure of posts limited to 4 years. 27th December, 1954.

Application forms from the Senior Administrative Medical Officer of the Board, Cheetwood-road, Manchester, 8, to be returned by dates stated.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS AND NEWCASTLE UPON TYNE REGIONAL HOSPITAL BOARD. Applications are invited for the post of ASSISTANT SURGEON in the E.N.T. Department of the Royal Victoria Infirmary under the Board of Governors, and SURGEON with the Regional Hospital Board. The appointment will be of Consultant status and will be full-time or maximum part-time. The major number of sessions will be with the Teaching Hospital and the remainder (2–4) in hospitals under the Regional Hospital Board.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne.

ST. HELENS. PROVIDENCE HOSPITAL. Applications invited for post of HONORARY ASSISTANT CONSULTANT GYNÆCOLOGIST at above Hospital. The Hospital has 125 Beds and an Outpatients Department and the appointment will be for 2 notional half-days per week exclusive of emergencies.

Applications, giving full details of qualifications and experience, and names and addresses of 2 referees, should be forwarded to the undersigned not later than 1st January, 1955.

WILLIAM I. LIVESEY, Honorary Secretary.

Providence Hospital, St. Helens.

ST. HELENS. PROVIDENCE HOSPITAL. Applications invited for post of HONORARY ASSISTANT CONSULTANT RADIOLOGIST at above Hospital. The Hospital has 125 Beds and an Outpatients Department and the appointment will be for 2 notional half-days per week.

Applications, giving full details of qualifications and experience, and names and addresses of 2 referees, should be forwarded to undersigned not later than 1st January, 1955.

WILLIAM I. LIVESEY, Honorary Secretary.

Providence Hospital, St. Helens.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time CONSULTANT CHILDREN'S PSYCHIATRIST for the Barnsley, Doncaster and Rotherham areas.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10. Forms to be returned by 8th January, 1955.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time CONSULTANT CHEST PHYSICIAN to be designated Physician-Superintendent of Ransom Sanatorium (185 Beds with Thoracic Surgical Unit, tuberculosis only). Other duties include the active supervision of the Chest Clinic and beds at King's Mill Hospital, Mansfield.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield. Forms to be returned by 15th January, 1955.

Hospital Services : Junior Appointments

ACTON HOSPITAL, Gunnersbury-lane, W.3. Senior HOUSE OFFICER (resident) required as "Inpatient Medical Officer" (medical and surgical beds) from 3rd January, 1955.

Applications, with copies of 2 testimonials, to Hospital Secretary by 23rd December, 1954.

BATTERSEA GENERAL HOSPITAL, Battersea Park, S.W.11. RESIDENT SURGICAL OFFICER (Junior Hospital Medical Officer grade), vacant mid-January.

Apply Hospital Secretary, enclosing copies of 2 recent testimonials.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10, and THE MIDDLESEX HOSPITAL, W.1. SENIOR REGISTRAR (whole-time) required in Gastro-enterological Department. Will include undergraduate teaching and research work. Appointment for 1 year renewable annually for further 3 years. After 2 years at Central Middlesex Hospital the successful candidate will be transferred to a General Medical Unit at the Middlesex Hospital, W.1. Applicants may visit hospitals by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Central Middlesex Group Hospital Management Committee, Acton-lane, N.W.10, by 31st December, 1954.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. SENIOR HOUSE OFFICER (resident) in General Medicine required with duties mainly in the Geriatric Department. Good facilities for higher examination and insight into working of general practice. Whole-time appointment for 6 months in first instance. Post vacant beginning January.

Applications, with copy each of 2 testimonials, to Medical Director by 29th December, 1954.

CONNAUGHT HOSPITAL, Walthamstow, E.17. House SURGEON required for 6 months (general surgery and special departments). Post vacant 30th December, 1954. Recognised for F.R.C.S.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to the Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

CONNAUGHT HOSPITAL, Walthamstow, E.17. (118 Beds.) Applications are invited for the post of RESIDENT ANÆSTHETIST (graded Senior House Officer), vacant 17th January, 1955. Salary £745 p.a. less £150 p.a. for board lodging, &c. Recognised for D.A. and F.F.A.R.C.S.

Applications, stating age, qualifications, and experience, together with copies of 2 recent testimonials, should be sent immediately to Secretary, Hospital Management Committee, Forest Group, Langthorne-road, London, E.11.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. HOUSE SURGEON (orthopædics) required 16th February.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary, Board of Governors, by 1st January.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 60, Grove End-road, London, N.W.8. Applications are invited from registered medical practitioners (Male) for the appointment of HOUSE SURGEON to the Midwifery and Gynæcology Departments to become vacant forthwith. Appointment will be for a period of 6 months. Salary is at the rate of £350 p.a.

Applications to the Secretary, together with copies of 3 recent testimonials.

LAMBETH HOSPITAL, Kennington, S.E.11. Applications are invited from pre-registration and registered medical practitioners, for the appointment of RESIDENT HOUSE SURGEON, vacant on 23rd January, 1955 The appointment is for 6 months, and is recognised for the F R.C.S.

Apply to the Physician-Superintendent.

LAMBETH HOSPITAL, Brook-drive, S.E.11. South WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the post of OBSTETRIC AND GYNÆCOLOGICAL REGISTRAR which will become vacant in March, 1955. The appointment is normally for 2 years but is subject to review annually. The post is recognised for the M.R.C.O.G., and includes a certain amount of teaching of the medical students from St. Thomas's Hospital. Canvassing will disqualify but candidates are not precluded from visiting the Hospital.

For forms of application apply (enclosing a stamped addressed envelope) to the Group Secretary, Lambeth Group Hospital Management Committee, Renfrew-road, S.E.11, to whom completed applications should be returned not later than 1st January, 1955.

LONDON CHEST HOSPITAL. Hospitals for Diseases of THE CHEST. 2 vacancies occur 1st February, 1955, for RESIDENT HOUSE PHYSICIAN. Appointments for 6 months, 4 in London, 2 at the Country Branch, near Letchworth, and posts are graded as House Officer. Duties include work in the Outpatient Department and refill clinic as well as in wards.

Applications, stating age, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should reach the undersigned not later than 22nd December.

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

MILDMAY MISSION HOSPITAL, Austin-street, Bethnal Green, London, E.2. Applications are invited for the pre-registration post of RESIDENT HOUSE PHYSICIAN AND CASUALTY OFFICER (first post), vacant 12th January, 1955. Salary £425 p.a., less £125 p.a. for residential emoluments. Candidates should be in sympathy with the evangelical aims of the Hospital, and preference will be given to intending medical missionaries.

Applications and references to be addressed to the Medical Superintendent.

MOTHERS' HOSPITAL (Salvation Army), Clapton, E.5. (Maternity—110 Beds.) Applications are invited for the 6-months appointment, as from 1st March, of RESIDENT OBSTETRIC HOUSE SURGEON (not pre-registration). Post recognised for M.R.C.O.G.

Apply Group Secretary, Hackney Hospital, London, E.9, by 1st January, quoting MH/HS.

MOTHERS' HOSPITAL (Salvation Army), Clapton, E.5. (Maternity—110 Beds.) Applications are invited for the 6-months appointment, as from 1st March, of RESIDENT OBSTETRIC HOUSE SURGEON (pre-registration). Post recognised for M.R.C.O.G.

Apply Group Secretary, Hackney Hospital, London, E.9, by 1st January, quoting MH/PHS.

MARIE CURIE HOSPITAL, 66, Fitzjohn's-avenue, Hampstead, N.W.3. Applications are invited from registered medical practitioners for the post of GYNÆCOLOGICAL HOUSE SURGEON (radiotherapy). Vacant forthwith.

Applications, with copies of testimonials, to the Medical Director.

MILE END HOSPITAL, Bancroft-road, E.1. House OFFICER (second or third—obstetrics). Post recognised in obstetrics for M.R.C.O.G. required for 6 months, commencing 18th January, 1955.

Application forms, which may be obtained from Physician-Superintendent, to be returned by 22nd December, 1954.

NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W.1. (158 Beds.) Applications are invited for the undermentioned posts :—

HOUSE PHYSICIAN (general), pre-registration. Commencing 7th February, 1955.

2 HOUSE SURGEONS (general), pre-registration. Commencing 20th January, 1955.

Applications, stating age, qualifications, and experience, together with names and addresses of 2 referees, to be forwarded to Hospital Secretary by 31st December, 1954.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON at The National Hospital, Queen-square, W.C.1, commencing 1st February, 1955. This post carries the grade of Registrar.

Applications, giving the names of 3 referees, to be sent to the undersigned not later than 31st December, 1954.

H. EWART MITCHELL, Secretary to the Board of Governors.

The National Hospitals for Nervous Diseases,
Queen-square, W.C.1.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. *Appointment of Full-time REGISTRAR (Registrar grading) to* the Department of Psychological Medicine at the Maida Vale Hospital for Nervous Diseases, London, W.9. Applicants should possess experience in psychological medicine, and a higher qualification in general medicine would be an advantage. The post offers neurological and psychiatric training facilities.

Applications, giving the names of 2 referees, to be sent to the Secretary at the Maida Vale Hospital, W.9, not later than 5th January, 1955.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. *Applications are invited from registered medical practitioners* for the appointment of HOUSE PHYSICIAN at The National Hospital, Queen-square, W.C.1. This post carries the grade of *Registrar. The appointment* will be for 1 year and will be renewed in exceptional circumstances.

Applications, with names of 3 referees, to be sent to the undersigned not later than 1st January, 1955.

H. EWART MITCHELL, Secretary to the Board of Governors.
The National Hospital, Queen-square, W.C.1.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) ANÆSTHETIC REGISTRAR (resident or non-resident), Southend General Hospital, Southend, Essex. Recognised for F.F.A.R.C.S. and D.A.

(2) *ANÆSTHETIC REGISTRAR (resident), Oldchurch* Hospital, Romford, Essex. Recognised for F.F.A.R.C.S. Duties will include work in the neurosurgical theatre.

(3) REGISTRAR in Surgical Tuberculosis (resident), Black Notley Hospital, Braintree, Essex. Recognised for F.R.C.S.

(4) 2 REGISTRARS in Diseases of the Chest (resident), High Wood Hospital for Children, Brentwood, Essex. Experience in tuberculosis or diseases in childhood essential.

(5) REGISTRAR in Obstetrics and Gynæcology (non-resident), North Middlesex Hospital and Annexes, Edmonton, N.18 (150 obstetric and 70 gynæcological beds). Possession of M.R.C.O.G. desirable.

(6) REGISTRAR in Obstetrics (resident), The Mothers' (Salvation Army) Hospital, Clapton, E.5, with gynæcological duties at other hospitals in the Group. Recognised for M.R.C.O.G.

(7) REGISTRAR in Ophthalmology (resident or non-resident), Southend General Hospital, Southend, Essex. Recognised for D.O. Excellent opportunities for gaining clinical and surgical experience in unit of 20 beds.

(8) E.N.T. REGISTRAR (non-resident), Whipps Cross Hospital, E.11. Some duties at Park House Health Centre E.N.T. Clinic.

(9) SURGICAL REGISTRAR (resident), St. Leonard's Hospital, Nuttall-street, N.1. Candidates should possess higher qualification.

(10) REGISTRAR in Psychiatry (resident or non-resident), Goodmayes Hospital, Goodmayes, Essex. Recognised for D.P.M.

Appointments subject to review after 1 year.

Separate applications in duplicate, with 2 copies of 2 recent testimonials, to Secretary, 11A, Portland-place, W.1, by 1st January, 1955.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. HOUSE SURGEON (general surgery), resident, required for 1st February, 1955, for 6 months. Approved as pre-registration (first or second) post. Recognised for training for F.R.C.S.

Applications, stating age, nationality, qualifications, experience, with copies of recent testimonials, to Secretary of Hospital, by 30th December, 1954.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. 2 OBSTETRIC AND GYNÆCOLOGICAL HOUSE SURGEONS (resident) required for 1st February, 1955.

(*a*) Registered medical practitioner.

(*b*) Pre-registration candidate (second post).

Both posts recognised by R.C.O.G. for Diploma, and as a combined post for Membership. Candidates must have held house appointments in either medicine or surgery. Large Obstetric and Gynæcological Department.

Applications (in own handwriting), stating age, nationality, qualifications, experience, with copies of recent testimonials, to Secretary of Hospital, by 30th December, 1954.

PRINCESS BEATRICE HOSPITAL, Earl's Court, S.W.5. CASUALTY OFFICER (resident), Senior House Officer grade. Some anæsthetic duties. Vacancy 1st January, 1955.

Applications, stating age, qualifications, with 3 testimonials, to the House Governor.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. PÆDIATRIC HOUSE PHYSICIAN (House Officer third post). Duties include some work in related departments (e.g., diabetic clinic, &c.). 6 months appointment commencing 2nd February, 1955. Post recognised for D.C.H.

Applications, with copies of testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, by 8th January, 1955.

ROYAL FREE HOSPITAL. Applications are invited for the post of JUNIOR RESIDENT ANÆSTHETIST. Applicants must be registered medical practitioners of not more than 10 years standing. The appointment is for 6 months, duties to commence on 1st March, 1955. Salary in accordance with the Ministry of Health scale for House Officers.

Application forms may be obtained from the Secretary to the Board of Governors, the Royal Free Hospital, Gray's Inn-road, London, W.C.1, to whom they should be returned not later than 4th January, 1955.

ROYAL FREE HOSPITAL. Applications are invited for the post of SENIOR RESIDENT ANÆSTHETIST. Applicants must be registered medical practitioners of not more than 10 years standing. The appointment is for 6 months from 1st March, 1955, with duties at the North-Western Branch and Hampstead General Hospital. Salary in accordance with the Ministry of Health scale for Senior House Officers.

Application forms may be obtained from the Secretary to the Board of Governors, the Royal Free Hospital, Gray's Inn-road, London, W.C.1, to whom they should be returned not later than 4th January, 1955.

ROYAL FREE HOSPITAL. Applications are invited for the post of RESIDENT MEDICAL OFFICER to work at the Lawn Road Branch of the above Hospital. Terms and conditions of service in accordance with the *Junior Hospital Medical Officer* scale. Duties, which are for 1 year in the first instance, to commence on 1st February, 1955.

Application forms may be obtained from the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 4th January, 1955.

ROYAL FREE HOSPITAL GROUP. Applications are invited from Men and Women medical practitioners for the appointment of ANÆSTHETIC REGISTRAR (resident). Applicants should possess the *D.A. qualification. The appoint*ment is for 1 year in the first instance, duties to commence on 1st March, 1955. Salary and conditions of service in accordance *with the terms and conditions laid down by the Ministry of* Health for Registrars.

Application forms may be obtained from the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom *they should be returned not later than 4th* January, 1955.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, *Great Portland-street, London, W.1. Applications are invited* for the appointment of ORTHOPÆDIC REGISTRAR (full-time), non-resident (2 vacancies). Preference will be given to candidates with a higher surgical qualification.

Applications to be received not later than 12th January, 1955. Forms of application can be obtained from the House Governor at 234, Great Portland-street, London, W.1.

REGIONAL NEUROSURGICAL CENTRE. (66 Beds.) BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER (neurosurgery), vacant 1st February. Post recognised for F.R.C.S. and provides excellent opportunity for training in neurology.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

SOUTH EAST REGIONAL THORACIC SURGERY UNIT. (46 Beds.) BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER. 2 posts vacant mid-January, recognised for F.R.C.S. 6 months appointments and may be renewed for a further period. The Unit treats all types of chest diseases and offers opportunity for comprehensive training in thoracic surgery.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Orthopædic Surgery to fill a vacancy in the approved trainee establishment at the Lewisham Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 1st January, 1955.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. Applications are invited for the post of SENIOR HOUSE OFFICER (tuberculosis).

Applications, stating age, qualifications, experience, together with names and addresses of 2 referees, to be forwarded to Hospital Secretary immediately.

ST. STEPHEN'S HOSPITAL, Chelsea, S.W.10. House PHYSICIAN (resident) for duty in Rheumatism Unit. Vacancy beginning January. This post offers valuable experience in the study of rheumatic diseases as well as general medicine.

Applications, naming 2 referees, to the Medical Superintendent immediately.

ST. STEPHEN'S HOSPITAL, Chelsea, S.W.10. House PHYSICIAN (general medicine), resident. Vacancy mid-January. Post-registration.

Applications, naming 2 referees, to Medical Superintendent.

ST. LEONARD'S HOSPITAL, Nuttall-street, London, N.1. (192 Beds.) Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer) with additional duties in the Group. The post is recognised for the D.A. Good opportunities will be given to study for higher qualifications.

Applications, with 2 recent testimonials, to the Hospital Secretary, by 1st January, 1955.

ST. LEONARD'S HOSPITAL, Nuttall-street, London, N.1. (General—182 Beds.) Applications are invited from registered or provisionally registered practitioners for the post of HOUSE PHYSICIAN for 6 months commencing 9th January, 1955.

Applications, with 2 recent testimonials, to be sent to the Hospital Secretary by 1st January, 1955. Applications may be sent in, pending qualifying examination results being known, and provided these are available at the date of interview which will be approximately first week in January.

ST. LEONARD'S HOSPITAL, Nuttall-street, London, N.1. (General—182 Beds.) Applications are invited from registered or provisionally registered practitioners for the post of HOUSE SURGEON for 6 months commencing 9th January, 1955.

Applications, with 2 recent testimonials, to be sent to the Hospital Secretary by 1st January, 1955. Applications may be sent in, pending qualifying examination results being known, and provided these are available at the date of interview which will be approximately first week in January.

ST. THOMAS'S HOSPITAL, London, S.E.1. Whole-time Locum SENIOR REGISTRAR to the Orthopædic Department *for 3 months from 14th February, 1955.*

Applications, including names and addresses of 2 referees, to the Clerk of the Governors by 31st December, 1954.

WHIPPS CROSS HOSPITAL, London, E.11. Leytonstone (NO. 10) HOSPITAL GROUP. Applications are invited for the post of Pre-registration HOUSE SURGEON in the Orthopædic Department at above Hospital, which will be vacant on 26th January, 1955.

Application forms from the Hospital Secretary, to be returned not later than 30th December, 1954.

AYLESBURY, BUCKINGHAMSHIRE. STOKE MANDEVILLE HOSPITAL. RESIDENT HOUSE PHYSICIAN for the Neurological Unit (a part of the Department of Neurology of *the United Oxford Hospitals), vacant 1st February, 1955.* Recognised pre-registration post, also open to registered practitioners, in which case status up to Senior House Officer may be awarded.

Applications, with copies of 2 testimonials, to the Administrative Officer.

ACCRINGTON. VICTORIA HOSPITAL. (112 acute beds.) HOUSE SURGEON required early in February, 1955. *Recognised for pre-registration purposes and for F.R.C.S.*

Apply to Secretary, Blackburn and District Hospital Management Committee, Hospital Management Committee Office, Royal Infirmary, Blackburn, Lancs.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGEMENT COMMITTEE. 2 HOUSE PHYSICIANS required at Ashton-under-Lyne General Hospital. 1 post vacant January, *1 vacant February, 1955. Preference will be given to pre-*registration applicants.

Applications, stating age, nationality, qualifications, and experience, together with copies of 3 testimonials, should be forwarded to the Group Secretary, Ashton-under-Lyne General Hospital, Ashton-under-Lyne, Lancs, as soon as possible.

BARNSTAPLE. NORTH DEVON INFIRMARY. (110 Beds.) HOUSE SURGEON (pre-registration) required. Post vacant 1st February, 1955.

Applications to Group Secretary, 19, Alexandra-road, Barnstaple.

BEDFORD GENERAL HOSPITAL. (437 Beds.) 3 RESIDENT HOUSE SURGEONS (pre-registration) required in December and January. The appointments offer exceptional opportunity for general experience in a busy acute Surgical Unit.

Applications, stating age nationality, qualifications, previous appointments, together with copies of 2 recent testimonials, should be forwarded to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (437 Beds.) Locum RESIDENT HOUSE PHYSICIAN (pre-registration post) required from 31st December, 1954, to 21st January, 1955. Salary £9 10s. per week.

Applications, stating age, nationality, qualifications, previous appointments, together with copies of 2 recent testimonials, should be forwarded to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford, by not later than 24th December, 1954.

BIRMINGHAM, 13. SORRENTO MATERNITY HOSPITAL. (112 Beds, including 24 premature baby cots.) OBSTETRIC HOUSE SURGEON. Appointment recognised for D.Obst.R.C.O.G. and vacant 1st February, 1955. Hospital affiliated to Birmingham Medical School for training of students.

Applications for above post to the Obstetrician, not later than 22nd December, 1954.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. (790 Beds.) 2 HOUSE SURGEONS (resident) required. Recognised for pre-registration and F.R.C.S. (Eng.). Vacant 10th January and 1st February, 1955, respectively, in 2 Units of General Surgery of approximately 80 adult and 10 children's general surgical beds under control of 2 Consultant Surgeons.

Applications, together with copies of 3 recent testimonials, to Secretary.

BIRMINGHAM, 9. LITTLE BROMWICH HOSPITAL. PÆDIATRIC HOUSE PHYSICIAN (Male or Female). Post vacant 1st February, 1955. Recognised for the D.C.H. includes duties in the infectious diseases wards, and at Neonatal Department and clinics.

Applications, to Physician-Superintendent.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE CHILDREN'S HOSPITAL. Applications are invited from registered medical practitioners for the post of RESIDENT HOUSE OFFICER (casualty), vacant 7th January, 1955, for 6 months.

Forms of application may be obtained from the House Governor, The Children's Hospital, Ladywood-road, Birmingham, 16, and should be returned not later than 28th December, 1954.

G. A. PHALP, Secretary to the Board of Governors.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE BIRMINGHAM MATERNITY HOSPITAL. Applications are invited from registered medical practitioners for the post of RESIDENT OBSTETRIC HOUSE SURGEON vacant 1st March, 1955. The appointment is recognised for the M.R.C.O.G.

Application forms obtainable from the House Governor, The Birmingham and Midland Hospitals for Women, Showell Green-lane, Sparkhill, Birmingham, 11, to be returned not later than 1st January, 1955. G. A. PHALP, Secretary.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. QUEEN ELIZABETH HOSPITAL. RESIDENT SURGICAL REGISTRAR (Registrar grade). Candidates must have held a resident appointment, and should hold at least a primary Fellowship qualification.

Forms of application from the Secretary, United Birmingham *Hospitals, Queen Elizabeth Hospital, to be returned by 8th* January, 1955.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS AND THE BIRMINGHAM REGIONAL HOSPITAL BOARD. Applications are invited for the joint whole-time appointment of NON-RESIDENT RADIOLOGICAL REGISTRAR (Senior Registrar grade). The duties will be apportioned at 5 sessions in the Teaching Hospital and 6 sessions in the Dudley Road Hospital Group, mainly at Dudley Road Hospital. Candidates must be registered medical practitioners, have had previous *experience in the specialty and possess a Diploma in Radiology.*

Forms of application may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned by 8th January, 1955.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Edmund-street, BIRMINGHAM, 3. Required, SENIOR HOUSE OFFICER or HOUSE OFFICER (including pre-*registration), according to experience.*

Detailed applications, with copies of 2 recent testimonials, to the Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street, BIRMINGHAM, 3. HOUSE SURGEON required. Appointment for 6 months, but renewable. Hospital carries *resident staff of 5 and provides a 2-year course of instruction* recognised for the *D.O. (England)* and *F.R.C.S. (England)* in Ophthalmology. Wide experience available in all branches, including surgery.

Detailed application to Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

1. **Birmingham (Selly Oak) Hospital Management Committee, Oak Tree-lane, *Birmingham, 29***

SURGICAL REGISTRAR for Birmingham Accident Hospital, Birmingham, 15 (215 Beds). Duties in Burns Unit (42 Beds) *in conjunction with Medical Research Council.* Experience specialty essential. Plastic surgical experience and higher qualification an advantage.

2. **Dudley, Stourbridge and District Hospital Group, The Guest Hospital, Dudley**

REGISTRAR in General Surgery for the Corbett Hospital, Stourbridge (106 Beds). Experience specialty essential, higher qualification desirable. Resident. Vacant 14th February.

3. **Shrewsbury Group of Hospitals, Royal Salop Infirmary, Shrewsbury**

RESIDENT MEDICAL REGISTRAR (145 Beds). House available.

Application forms from Group Secretaries to be returned before 3rd January, 1955. Candidates may visit hospitals.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIANS. 2 required—1 pre-registration post vacant on 1st February, 1955, for duties at the Poole General Hospital, Poole—1 non-pre-registration post for duties at the Alderney Hospital, Parkstone, and Poole General Hospital, the latter resident at Alderney Hospital.

Applications for both posts to the Hospital Secretary, Poole General Hospital.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. ROYAL VICTORIA HOSPITAL, WEST-BOURNE, HANTS. Applications are invited for the immediate appointment of HOUSE SURGEON for E.N.T. and ophthalmic duties. In addition to duties at the above Hospital, the successful candidate will be required to assist in the E.N.T. outpatient clinics at the Royal Victoria Hospital, Bournemouth, and Poole General Hospital, Poole. The appointment is recognised for the D.O. and D.L.O. Diplomas but not for pre-registration purposes.

Applications to the Deputy Hospital Secretary, Royal Victoria Hospital, Shelley-road, Bournemouth.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. (494 Beds.) **BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE.** Applications are invited for the appointment of HOUSE SURGEON. The post, which becomes vacant on 30th December, 1954, is recognised for the F.R.C.S. examination and for pre-registration purposes.

Applications to the Deputy Hospital Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. (494 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (resident), orthopædic and casualty combined. Post vacant 1st January, 1955, is recognised for the F.R.C.S. examination and is tenable for 12 months.

Applications to the Deputy Hospital Secretary.

BLACKPOOL AND FYLDE HOSPITAL MANAGEMENT COMMITTEE. DEVONSHIRE ROAD HOSPITAL, BLACKPOOL. (128 Beds.) SENIOR HOUSE OFFICER (resident) with duties in connection with care of beds under the Group Consultant Pædiatrician at the Victoria Hospital (General) (344 Beds), and the "Glenroyd" Maternity Hospital, Blackpool (60 Beds), and duties at the Devonshire Road Hospital (infectious diseases). Post vacant 10th February, 1955, and provides good opportunities for gaining experience in child health and infectious diseases.

Applications, with the names and addresses of 3 referees, should be sent to the Group Secretary, Victoria Hospital, Blackpool.

BLACKPOOL. VICTORIA HOSPITAL. (General Hospital—344 Beds. Consultant staffed.) CASUALTY OFFICER (Junior Hospital Medical Officer status) required. Post vacant 21st January, 1955. Salary £775–£50–£1075. Tenure of post 4 years. Recognised for F.R.C.S. This is a busy General Hospital (opened 1937) with a large Outpatient Department and the post offers excellent opportunities for gaining general experience.

Applications, giving full particulars of experience, &c., together with the names and addresses of 3 referees, to the Hospital Secretary.

BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.

JUNIOR HOSPITAL MEDICAL OFFICER. For duties in the Geriatric Department (which contains acute admission wards and has full physiotherapy, laboratory, and radiological facilities) and also to assist in the supervision of the health of nurses. Appointment will be for a period of 4 years in the first instance.

RESIDENT ANÆSTHETIST (Senior House Officer grade). Main duties at Bolton District General Hospital and Bolton Royal Infirmary. Tenable for 12 months and recognised for the D.A. and F.F.A.R.C.S.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, to Group Secretary, The Royal Infirmary, Bolton.

BOLTON. THE ROYAL INFIRMARY. (237 Beds.) MANCHESTER REGIONAL HOSPITAL BOARD. RESIDENT REGISTRAR in General Surgery (Resident Surgical Officer). Recognised for F.R.C.S. The post is the senior resident surgical appointment and offers excellent practical experience.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, should be sent immediately to Group Secretary, Bolton and District Hospital Management Committee, The Royal Infirmary, Bolton.

BRISTOL. HAM GREEN HOSPITAL, Pill, near Bristol. Applications are invited for the post of SENIOR HOUSE OFFICER in the tuberculosis wards (188 Beds) of the above Hospital. The Hospital is fully equipped for the modern treatment of pulmonary tuberculosis, including regular major thoracic surgery. Good accommodation, male or female, is available. Salary at present £745 p.a., less £135 p.a. residential costs.

Apply Secretary, Ham Green Hospital, Pill, near Bristol.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MAN-AGEMENT COMMITTEE. SENIOR HOUSE OFFICER in Pathology required 1st March, 1955, at Frenchay Hospital (513 Beds—General Medicine, General Surgery and Thoracic, Neurosurgical and Plastic Units for the South West). Post may be resident or non-resident but residence essential when on call. It provides training in all branches of clinical pathology and laboratory is recognised for Diploma in Pathology. Some duties in connection with the Regional Blood Transfusion Service.

Detailed applications, quoting 2 referees, should reach the Group Secretary, Frenchay Hospital, Bristol, by 30th December, 1954.

BURY AND ROSSENDALE HOSPITAL MANAGE-MENT COMMITTEE. BURY GENERAL HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident) in Anæsthetics. The post, which will be limited to a tenure of 4 years in the first instance, is based on Bury General Hospital, but will include duties at other hospitals in the Group, and provides wide experience. The anæsthetic staff comprises, in addition, a Consultant and a Senior Hospital Medical Officer.

Apply, stating age, qualifications, experience, and names of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

BURY AND ROSSENDALE HOSPITAL MANAGE-MENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER in Pædiatrics. The post is based on Bury General Hospital, but will include duties at other hospitals in the Group.

Apply, stating age, qualifications, experience, and names of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botleys Park War Hospital). (430 Beds.) ORTHOPÆDIC HOUSE SURGEON required from 28th December. Senior House Officer or House Officer (Intern grade). Post recognised for F.R.C.S. for pre-registration internship. Preference will be given to provisionally registered candidates. Salary in accordance with terms and conditions of National Health Service.

Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent, St. Peter's Hospital, as soon as possible.

OLIVER PLUNKETT, Physician-Superintendent.

BRIGHTON GENERAL HOSPITAL. House Surgeon (recognised for F.R.C.S.) for General Surgical Unit (60 Beds). Post will be vacant 9th January, 1955, and is recognised as a pre-registration appointment.

Applications, stating usual particulars and naming 2 referees, to the Physician-Superintendent, Brighton General Hospital, Elm-grove, Brighton, 7.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (300 Beds.) CASUALTY HOUSE SURGEON (1 of 3). Duties include work in Orthopædic and Traumatic Unit. Recognised for pre-registration and F.R.C.S. Vacant beginning of January.

Applications, stating usual particulars and naming 2 referees, to the Administrative Officer.

CARLISLE. CUMBERLAND INFIRMARY. (340 Beds.) Applications are invited for the appointment of SENIOR HOUSE OFFICER (general surgery), which is recognised for the F.R.C.S. examinations and is for a period of 1 year.

Applications, giving the names of 2 referees, should be sent to the Secretary as soon as possible.

CHEPSTOW. CHEST UNIT, MOUNT PLEASANT HOSPITAL. (150 Beds.) SENIOR HOUSE OFFICER required for new Thoracic Surgery Unit now opening. Salary £745, less £130 board-residence. Also resident are a Senior Hospital Medical Officer and a Junior Hospital Medical Officer. Successful candidate will receive thorough training in specialty.

Write, quoting 2 referees, to—

T. A. JONES, Group Secretary.

64, Cardiff-road, Newport, Mon.

CHELMSFORD. ST. JOHN'S HOSPITAL. Applications are invited from registered practitioners for the post of RESIDENT PÆDIATRIC HOUSE OFFICER (Male or Female), commencing 10th January, 1955, to work in the Pædiatric Unit of the Chelmsford Hospital Group. The Unit includes a Premature Baby Nursery of 10 cots and a Neo-natal Department in the Maternity Block of the Hospital. The department is recognised for the D.C.H.

Applications, stating age, nationality, qualifications and experience, together with recent testimonials should be received not later than 30th December by the Secretary, Chelmsford Hospital Management Committee, Chelmsford and Essex Hospital, London-road, Chelmsford.

CHELMSFORD AND ESSEX HOSPITAL. (163 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON (pre-registration post). The post will become vacant on 9th January and offers good surgical experience and is recognised for the F.R.C.S.

Applications, together with 2 recent testimonials to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHESTERFIELD ROYAL HOSPITAL. (257 Beds. Recog-nised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required. Post becomes vacant 1st March, 1955. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 27th December, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

COLCHESTER. ESSEX COUNTY HOSPITAL. (188 Beds.) Applications are invited for the post of HOUSE OFFICER (surgical), first, second, third, or pre-registration post; tenable for 6 months.

Applications, with copies of 3 testimonials, to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

CROYDON GENERAL HOSPITAL. (200 Beds.) Surgical HOUSE OFFICER (pre-registration) required as from 30th December.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, Croydon, to be returned immediately.

CROYDON. MAYDAY HOSPITAL. (618 Beds.) Locum Tenens JUNIOR HOSPITAL MEDICAL OFFICER required for period of 3 months in first instance commencing 10th January, 1955. Good experience in general medicine essential.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, London-road, Croydon, to be returned by 1st January.

DONCASTER ROYAL INFIRMARY. (330 Beds.) DONCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON, vacant early January. Approved as pre-registration post and recognised for F.R.C.S.

Applications to the Secretary to the Committee, at the Doncaster Royal Infirmary.

DONCASTER ROYAL INFIRMARY. (330 Beds.) DONCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE PHYSICIAN, vacant early January. Approved as pre-registration post.

Applications to the Secretary to the Committee, at the Doncaster Royal Infirmary.

DERBY CITY HOSPITAL. Pædiatric House Physician (pre-registration) or SENIOR HOUSE OFFICER (medical), vacant late January. The post also provides some adult experience.

Apply, stating full details together with copies of 2 recent testimonials, to the Medical Superintendent.

DERBY. DERBYSHIRE ROYAL INFIRMARY. (396 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (orthopædics) required. Post becomes vacant 4th March, 1955. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 27th December, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP. BIRMINGHAM REGION. Applications invited from registered practitioners for following appointments :—

The Guest Hospital, Dudley (154 Beds)

SENIOR HOUSE OFFICER (Anæsthetist). Post now vacant.

HOUSE OFFICER (surgical), pre-registration. Post vacant January.

Wordsley Hospital, near Stourbridge (478 Beds)

SENIOR HOUSE OFFICER (resident), Anæsthetist. Post now vacant. In addition to general surgery, experience is available in gynæcology and there is a major Orthopædic Unit. Regional Plastic Surgery Unit at this Hospital.

SENIOR HOUSE OFFICER (surgical).

HOUSE OFFICER (surgical), pre-registration. Post vacant January.

The Corbett Hospital, Stourbridge (106 Beds)

HOUSE OFFICER (surgical) pre-registration. Post vacant 8th January.

Applications, stating age, experience, with copies of 3 recent testimonials, to Group Secretary, The Guest Hospital, Dudley, Worcs.

DURHAM HOSPITAL MANAGEMENT COMMITTEE.

Dryburn Hospital, Durham (309 Beds)

HOUSE OFFICER (general medicine). Post vacant 1st February, 1955. Recognised for pre-registration purposes.

HOUSE OFFICER (general surgery). Post vacant 1st February, 1955. Recognised under F.R.C.S. regulations and for pre-registration purposes.

SENIOR HOUSE OFFICER (gynæcology). Post vacant 1st February, 1955.

General Hospital, Chester-le-Street (207 Beds)

HOUSE OFFICER (general medicine). Post vacant 1st February, 1955. Recognised for pre-registration purposes.

SENIOR HOUSE OFFICER (general medicine). Post vacant 1st February, 1955.

HOUSE OFFICER (general surgery). Post vacant 1st February, 1955. Recognised for pre-registration purposes.

SENIOR HOUSE OFFICER (general surgery). Post vacant early January, 1955.

Applications, with names of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

EAST KILBRIDE, LANARKSHIRE. HAIRMYRES HOSPITAL. (844 Beds.) The following House Officer posts will fall vacant on 1st February, 1955 :—

6 HOUSE SURGEONS.

2 HOUSE PHYSICIANS (medical wards).

The House Surgeon posts are in general surgical wards, but each post is linked either with orthopædic surgery, genito-urinary surgery, or thoracic surgery. All posts are recognised for Pre-registration Service.

Applications, giving details of age, qualifications and 3 testimonials, should be sent to the Medical Superintendent, Hairmyres Hospital.

EAST ANGLIAN REGIONAL HOSPITAL BOARD.

(1) REGISTRARS in Psychiatry :—

(*a*) Fulbourn Hospital and Addenbrooke's Hospital, Cambridge. Joint appointment by Regional Hospital Board and Board of Governors of United Cambridge Hospitals. Trainee post which provides full facilities for clinical work with all types of patients and study for D.P.M. The successful candidate will work initially at Fulbourn Hospital and later also undertake duties at Addenbrooke's Hospital.

(*b*) St. Andrew's Hospital, Thorpe, Norwich (1250 Beds). Full range of modern psychiatric treatments and a number of associated general hospital outpatient clinics. Married or single quarters available.

(*c*) Ipswich Mental Hospital Group—St. Clement's Hospital, Ipswich (450 Beds) and St. Audry's Hospital, Melton, near Woodbridge (1100 Beds) and associated General Hospital outpatients clinics. There is a new Outpatient Department and Electro-encephalographic Department at St. Clement's Hospital. Married quarters available.

Candidates submitting applications for more than 1 post should indicate any preference. Appointments for 1 year, renewable for second year. Candidates invited to visit hospitals by direct arrangement with the appropriate Medical Superintendent.

(2) ANÆSTHETIC REGISTRAR, West Norfolk and King's Lynn Hospital (145 Beds). Single accommodation available. Post provides wide experience and recognised for D.A. Appointment for 1 year, renewable for second year. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary at the Hospital.

(3) MEDICAL REGISTRAR, Nayland Sanatorium, near Colchester (207 Beds). Post provides wide experience in tuberculosis and diseases of the chest. Married accommodation available. Appointment for 1 year, renewable for second year. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary, East Suffolk and Ipswich Hospital, Ipswich.

(4) ORTHOPÆDIC REGISTRAR, East Suffolk and Ipswich Hospital and Ipswich Borough General Hospital. Post provides wide experience and training in orthopædic surgery. Appointment for 1 year, renewable for second year. Candidates invited to visit Hospitals by direct arrangement with Hospital Management Committee Secretary, East Suffolk and Ipswich Hospital, Ipswich.

(5) SURGICAL REGISTRAR, Peterborough Memorial Hospital. The successful candidate will be required to share duties in Casualty Department. Post offers wide experience. Appointment for 1 year, renewable for second year. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary at the Hospital.

Applications, stating age, experience and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 27th December, 1954.

EAST ANGLIAN REGIONAL HOSPITAL BOARD.

(1) MEDICAL REGISTRAR at Foxhall Hospital, Ipswich (formerly Ipswich Sanatorium) (102 Beds). Duties include work in the Thoracic Surgical Unit and in the Ipswich Chest Clinic. A house is available. Appointment for 1 year, renewable for second year. Candidates invited to visit the Hospital by direct arrangement with the Hospital Management Committee Secretary, East Suffolk and Ipswich Hospital.

(2) ANÆSTHETIC REGISTRAR, United Norwich Hospitals. Post provides wide experience and recognised for D.A. and F.F.A.R.C.S. Appointed for 1 year, renewable for second year. Candidates invited to visit the hospitals by direct arrangement with Hospital Management Committee Secretary, Norfolk and Norwich Hospital.

Applications, stating age, experience, and the names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 3rd January, 1955.

EDINBURGH CENTRAL HOSPITALS. Applications are invited from registered medical practitioners for the appointment of ANÆSTHETIST (Junior Hospital Medical Officer grade), commencing 1st January, 1955. Salary scale £775–£50–£1075. National Health Service conditions. Non-resident. Work mainly with children but includes some adult general surgery and gynæcology.

Applications, with full particulars of age, qualifications and experience, and names of 2 referees, to be submitted immediately to Medical Superintendent, Edinburgh Central Hospitals, 18, Rillbank-terrace, Edinburgh, 9.

EPPING. ST. MARGARET'S HOSPITAL. (485 Beds.) RESIDENT SENIOR HOUSE OFFICER (medicine). Post vacant 1st February, 1955. Duties mainly general medical. Experience in pædiatrics desirable. Salary on national scale, less deduction for board, lodging, &c.

Applications, with copies of 2 recent testimonials, to reach the Group Secretary, Epping Group Hospital Management Committee, St. Margaret's Hospital, Epping, Essex, by 31st December, 1954.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. RESIDENT HOUSE SURGEON required 1st February, 1955. Pre-registration post. Recognised for F.R.C.S.

Applications, stating age, qualifications, and experience, with copies of 2 recent testimonials, should be sent immediately to Group Secretary at above address.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL, The Ridgeway. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. CLINICAL ASSISTANT to the Consultant in Physical Medicine required 1st February, 1955, for 3 sessions per week, for a minimum period of 6 months, the appointment to be subject to review prior to the expiration of 6 months. The person appointed will work in the Department at Chase Farm Hospital, and a small number of beds is available for the work of the Department.

Applications, with the names and addresses of 2 referees, to the Secretary of the Management Committee.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT PATHOLOGIST (Senior House Officer grade) for duties in the Area Laboratory and at other hospitals in the Group. The Area Laboratory is recognised for the Diploma of Pathology of the Royal Colleges of Physicians and Surgeons. Further information can be obtained from the Senior Pathologist. Appointment tenable for 1 year.

Applications, with the names of 2 referees, to the Secretary of the Management Committee at Chase Farm Hospital by 31st December, 1954.

GLASGOW ROYAL INFIRMARY. Senior House Officer in Orthopædics based at above Infirmary.

Write, giving 3 names for reference, not later than 30th December, 1954, to the Secretary, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

GLASGOW ROYAL INFIRMARY. Senior House Officer in Radiodiagnosis based at above Infirmary.

Write, giving 3 names for reference, not later than 30th December, 1954, to the Secretary, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

GRIMSBY GENERAL HOSPITAL. (238 Beds.) Grimsby HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR (pre-registration) or SENIOR HOUSE OFFICER (surgical), vacant from 26th January, 1955.

Applications, with names of 2 referees, to Hospital Secretary, Grimsby General Hospital.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of HOUSE SURGEON (general—first, second, or third post), to commence 21st January, 1955. Pre-registration post ; recognised under F.R.C.S. regulations.

Applications to Group Secretary, Hertford Group Hospital Management Committee, Hertford County Hospital, Hertford, Herts.

HITCHIN, HERTFORDSHIRE. LISTER HOSPITAL. Applications are invited for the post of HOUSE SURGEON for Accident Service, including Orthopædic Department, vacant 12th January, 1955, and tenable for 6 months. Recognised as pre-registration post.

Applications, stating age, nationality, qualifications, and experience, together with copies of 3 recent testimonials, to be sent to the Medical Administrator, immediately.

HULL. VICTORIA HOSPITAL FOR SICK CHILDREN, Park-street. HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON which is now vacant. 6-monthly term ; counts towards the D.C.H. qualification. Salary according to national scale.

Replies, with testimonials, to be sent to the Hospital Secretary.

HASTINGS. ST. HELEN'S HOSPITAL. (497 Beds.) HOUSE PHYSICIAN (resident) required for pædiatrics and general medicine. National scale of salary. Post vacant 21st December.

Apply to Hospital Administrator.

HASTINGS AND ST. LEONARDS. BUCHANAN HOSPITAL. (94 Beds.) SENIOR HOUSE OFFICER required for urology and children's surgery. Post vacant 19th January, 1955, is recognised for F.R.C.S., and may be tenable for 6 or 12 months. National scale of salary.

Apply to Hospital Administrator.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) SENIOR HOUSE OFFICER (casualty and orthopædic) post vacant 26th January, 1955. National scale of salary.

Apply to Hospital Administrator.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. HOUSE SURGEON (pre-registration).

Applications, mentioning 2 names for reference, should be sent to the Hospital Secretary at once.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. CASUALTY OFFICER (Junior Hospital Medical Officer). Post vacant 1st February, 1955.

Applications, mentioning 2 names for reference, should be sent to the Hospital Secretary.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (whole-time) required in Department of Physical Medicine. Department is a large one and includes unit with 10 beds under Physician in Physical Medicine. Candidates should have good experience in general medicine. Department recognised for Diploma of Physical Medicine. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, South West Middlesex Hospital Management Committee. West Middlesex Hospital, Isleworth, by 29th December, 1954.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. (1143 Beds.) **NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.** REGISTRAR (Medical Unit), vacant March. Whole-time non-resident. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, South West Middlesex Group Hospital Management Committee, West Middlesex Hospital, Isleworth, by 29th December, 1954.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (Maternity Department). Must have held medical, surgical, obstetrical and gynæcological house posts. Vacant 8th February, 1955.

Applications, stating age, nationality, qualifications and testimonials, to Group Secretary, West Middlesex Hospital, by 30th December, 1954.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. (1143 Beds.) **NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.** REGISTRAR (whole-time) in Obstetrics and Gynæcology. 1 year in first instance. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, by 30th December, 1954.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department. Approved pre-registration post.

Applications, with copies of recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the E.N.T. and Ophthalmic Departments, vacant on 25th January, 1955. The post is recognised for pre-registration and for the D.L.O. examination.

Applications, giving full particulars and copies of recent testimonials, to the Hospital Secretary.

ILFORD. KING GEORGE HOSPITAL. (General Hospital—215 Beds.) There is a vacancy for a SENIOR HOUSE OFFICER (Orthopædic Department) at the above Hospital. Salary will be at the rate of £745 p.a., less emoluments.

Applicants should have been registered not less than 1 year and should send applications, accompanied by copies of 3 testimonials, to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Secretary,
Ilford and Barking Group Hospital Management Committee.
King George Hospital, Ilford.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for a post as REGISTRAR in Psychiatry for the period to 30th September, 1955. The successful applicant will be eligible for reappointment for a further period from 1st October, 1955. The principal duties of the post will be at the Liverpool Royal Infirmary and the Royal Southern Hospital and it is suitable for a person studying for a higher qualification in psychological medicine.

Apply by 1st January, 1955, on form obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for an appointment as REGISTRAR in Ophthalmology at St. Paul's Eye Hospital (116 Beds) for the period to 30th September, 1955. The successful candidate will be eligible for reappointment for a further period from 1st October, 1955.

Apply by 31st December, 1954, on form obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. LIVERPOOL EAR, NOSE AND THROAT INFIRMARY. Applications are invited for a post of SENIOR HOUSE OFFICER in Otorhinolaryngology for the period to 30th September, 1955.

Apply as soon as possible on form obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL, 18. MOSSLEY HILL HOSPITAL. Junior HOSPITAL MEDICAL OFFICER (surgical) required immediately at above War Pensioner's Hospital (148 Beds). National Health Service terms and conditions.

Forms of application may be obtained from the Medical Superintendent.

LIVERPOOL, 15. SEFTON GENERAL HOSPITAL. (995 Beds, 116 Cots.) **SOUTH LIVERPOOL HOSPITAL MANAGEMENT COMMITTEE.** Applications are invited for the following resident appointments which will become vacant at the above-named Hospital on 1st March, 1955, and will be for a period of 6 months. These posts are approved as pre-registration posts.

6 HOUSE PHYSICIANS (general).
2 HOUSE PHYSICIANS (psychiatric).
2 HOUSE SURGEONS (general).
2 HOUSE SURGEONS (obstetric).
1 HOUSE PHYSICIAN (tropical).

The terms and conditions of service will be in accordance with the regulations of the Ministry of Health.

Application forms may be obtained from the undersigned to whom they should be returned not later than Friday 31st December, 1954.

GARNET CHAPLIN, Secretary to the Committee.

LINCOLN. LAWN HOSPITAL, Union-road. (Mental Hospital for Private Patients—100 Beds.) **LINCOLN NO. 2 HOSPITAL MANAGEMENT COMMITTEE.** JUNIOR HOSPITAL MEDICAL OFFICER (full-time or Locum Tenens). Salary and conditions of service in accordance with latest recommendations of Whitley Council. A small flat is available.

Apply as early as possible to the Medical Superintendent.

LINCOLN. ST. GEORGE'S HOSPITAL. (152 Beds.) **SHEFFIELD REGIONAL HOSPITAL BOARD.** Whole-time RESIDENT REGISTRAR (orthopædics) with outpatient clinic duties at the County Hospital, Lincoln, required. There are 42 orthopædic beds involved. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 27th December, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

LEEDS, 9. ST. JAMES'S HOSPITAL. Leeds A Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male and Female) for the appointment of SENIOR HOUSE OFFICER (orthopædics). The appointment will be for a period of 1 year and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely, £745 p.a., with an appropriate deduction in respect of board, lodgings, and other services provided.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.
Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following REGISTRAR posts :—

Anæsthetics

St. Luke's Hospital, Bradford, and other hospitals in the Bradford A Group (resident).

Dermatology

Duties mainly at the Bradford Royal Infirmary (40 dermatological beds). Large Outpatient Department—5000 new cases annually (resident).

General Medicine

Halifax Group (110 general medical, 380 geriatric, beds). Duties divided equally between general medicine and geriatrics (non-resident but accommodation may be arranged for a single man).

General Surgery

Hull A Group, mainly at Western and Kingston General Hospitals (150 general surgical beds) (resident or non-resident). Recognised for F.R.C.S.

Genito-urinary Surgery

Bradford Royal Infirmary (66 genito-urinary and 84 general surgical beds), and the Duke of York Home (Section 5 beds). Approximately 1/5th of the duties will be general surgical (non-resident).

Ophthalmology

(*a*) Huddersfield (22 eye beds—1800 new outpatients annually) (non-resident).

(*b*) Halifax and Bradford A Hospital Management Committee Groups. Duties divided equally between Halifax Group (11 eye beds—1800 new outpatients annually) and Bradford A (34 eye beds—5800 new outpatients annually).

(*c*) St. James's Hospital (22 eye beds—5600 new outpatients annually) and the Public Dispensary, Leeds (non-resident).

Orthopædic Surgery

(*a*) Royal Bath Hospital, Harrogate (40 orthopædic beds). Duties in connection with the Regional Rheumatism Scheme (resident).

(*b*) Duties mainly at Pinderfields General Hospital, Wakefield (70 short-stay and 160 long-stay orthopædic beds) and at other hospitals in the Wakefield A and B Groups (resident).

Psychiatry

Clifton Hospital, York (1000 Beds) (resident or non-resident). Facilities for attendance at the Leeds University may be provided if the successful candidate is studying for the D.P.M.

Applications, stating age, qualifications and details of appointments held showing dates, with names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 30th December, 1954.

LEEDS. UNITED LEEDS HOSPITALS. General Infirmary at Leeds. REGISTRAR required for Surgical Professorial Unit. The post is resident in the first place and tenable for 1 year in the first instance.

Applications, stating age, qualifications and previous posts with dates, and the names of 3 referees, should be sent to the Sub-Dean, School of Medicine, Leeds, 2, not later than 15th January, 1955.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds.) HOUSE PHYSICIAN (pre-registration post), vacant 18th January, 1955.

Applications, with names of 2 recent referees, to be sent to Hospital Secretary.

LEICESTER ROYAL INFIRMARY. Locum Senior House OFFICER in Anæsthetics required for 8 weeks from 1st January, 1955. Salary £14 10s. per week.

Applications, stating age, qualifications and experience, to Group Secretary, Leicester No. 1 Hospital Management Committee, The Leicester Royal Infirmary, Infirmary-square, Leicester, forthwith.

LEICESTER ROYAL INFIRMARY. (492 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR with some duties in the Casualty Department required. Post becomes vacant 4th March, 1955. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 27th December, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

LEICESTER ROYAL INFIRMARY. (507 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR (ophthalmology) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 27th December, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

LUTON AND DUNSTABLE HOSPITAL, Luton, Bedfordshire. Applications are invited for the post of SENIOR HOUSE OFFICER for Accident Service including duties in the Hand Infection Unit, vacant 1st January, 1955, and tenable for 1 year. Post recognised for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Secretary by 20th December, 1954.

LUTON AND DUNSTABLE HOSPITAL, Luton, Bedfordshire. Applications are invited for the post of ORTHOPÆDIC HOUSE SURGEON including duties in the Accident Service, vacant 1st January, 1955, and tenable for 6 months. Recognised as pre-registration post and for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Secretary by 20th December, 1954.

LUTON AND DUNSTABLE HOSPITAL, Luton, Bedfordshire. Applications are invited for the post of GYNÆCOLOGICAL HOUSE SURGEON, vacant 1st January, 1955, and tenable for 6 months. Recognised as pre-registration post and includes some obstetrical duties.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Secretary by 20th December, 1954.

LUTON AND DUNSTABLE HOSPITAL, Luton, Bedfordshire. Applications are invited for 2 posts of HOUSE SURGEON, vacant 1st January and 9th January, 1955, and tenable for 6 months. Recognised as pre-registration posts and for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Secretary by 20th December, 1954.

LUTON AND DUNSTABLE HOSPITAL, Luton, Bedfordshire. (250 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Whole-time MEDICAL REGISTRAR (resident) required at the above Hospital. Post vacant 1st February, 1955. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Luton and Hitchin Group Hospital Management Committee, St. Mary's Hospital, Luton, Beds, by 30th December, 1954.

LYMINGTON HOSPITAL, Lymington, Hampshire. (95 Beds.) RESIDENT SENIOR HOUSE OFFICER (medical) required immediately.

Applications, with copies of testimonials, should be submitted as soon as possible, to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

LLANELLY HOSPITAL. (164 Beds.) Glantawe Hospital MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident) for work in the Surgical Unit of 75 Beds. The post offers excellent experience in general surgery and the Hospital is recognised under the F.R.C.S. regulations.

Applications, stating age, experience, and qualifications, to be addressed to the Hospital Secretary, Llanelly Hospital, Marble Hall-road, Llanelly.

LOWESTOFT AND NORTH SUFFOLK HOSPITAL, LOWESTOFT. (99 Beds.) HOUSE PHYSICIAN (Male or Female) required. The post is recognised for Pre-registration Service and the Hospital is regularly visited by Consultant staff from the Norfolk and Norwich Hospital. Salary £425, £475 or £525 p.a. according to experience, less £125 for residence. Alternatively, as SENIOR HOUSE PHYSICIAN, salary £745 p.a., less £150 for residence. Membership of a Medical Defence Society is a condition of appointment.

Applications, stating age, qualifications and experience, with names and addresses of 2 referees, to Hospital Secretary.

MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR (anæsthetics), resident, to the Burnley and District Group of hospitals. The hospitals are recognised for the purposes of the D.A.

Applications, together with the names and addresses of 3 referees, should be addressed to the Group Secretary, Burnley and District Hospital Management Committee, Burnley General Hospital.

MANCHESTER REGIONAL HOSPITAL BOARD. Senior REGISTRAR in Psychiatry, Bury and Rossendale and Rochdale Groups. Duties include attendance at Consultant Psychiatric Clinics and participation in treatment of inpatients and outpatients at hospitals in the 2 Groups and possibly at Prestwich Mental Hospital, near Manchester, either concurrently with other duties or whole-time for not more than 1 year during period of employment.

Application forms from the Senior Administrative Medical Officer, Cheetwood-road, Manchester, 8, to be returned by 10th January, 1955.

MANCHESTER REGIONAL HOSPITAL BOARD. Rochdale and District Hospital Management Committee. REGISTRAR in Chest Diseases required for work in Sanatoria and new chest clinic. Post includes some duties in the Mass Miniature Radiography Unit.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of REGISTRAR in Thoracic Surgery, to the Blackpool and Fylde Group of hospitals, with main duties at Victoria Hospital, Blackpool.

Applications, together with copies of 2 recent testimonials, should be sent to the Group Secretary, Blackpool and Fylde Hospital Management Committee, Victoria Hospital, Blackpool.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of REGISTRAR in Anæsthetics, which may be either resident or non-resident. The main duties will be with the Stockport and Buxton Hospital Management Committee with some duties in the Macclesfield and District Hospital Management Committee Group. The post is recognised for the D.A. and F.F.A.R.C.S.

Applications, stating age, experience and qualifications, together with the names of 2 referees, to be forwarded to the undersigned, immediately. H. G. PRICE, Group Secretary.

59B, Shaw-heath, Stockport, Cheshire.

MANCHESTER REGIONAL HOSPITAL BOARD. Bury and Rossendale Hospital Management Committee. Applications are invited for the post of REGISTRAR in Obstetrics and Gynæcology at Fairfield General Hospital. The post is resident and a house is available in the Hospital grounds.

Apply, stating age, qualifications, experience, and names of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD. Bury and Rossendale Hospital Management Committee. Applications are invited for the post of REGISTRAR in Orthopædics, based at Bury General Hospital.

Apply, stating age, qualifications, experience, and names of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

MANCHESTER. DUCHESS OF YORK HOSPITAL FOR BABIES, LEVENSHULME, MANCHESTER, 19. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (Male or Female) required, for 6 months commencing 1st February, at the above Hospital which is associated with the Manchester University for teaching purposes.

Applications, with copies of 3 testimonials, to be sent to the Administrative Officer of the Hospital, by 3rd January, 1955.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS. Applications are invited for the post of SENIOR HOUSE OFFICER in Obstetrics. Applicants must have had previous hospital experience in general medicine and surgery, and in obstetrics. The post is recognised for purposes of the M.R.C.O.G. examination. The duties involve clinical responsibility for mothers and babies, and supervision of the work of pre-registration House Officers is also included. The appointment is for 12 months from 1st April, 1955. National scale.

Application forms may be obtained from the undersigned and returned not later than 31st December, 1954.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for SENIOR HOUSE OFFICER post. Salary £745 p.a., less £155 p.a. for residential emoluments.

Application forms may be obtained from the undersigned.

H. R. NORTH, General Superintendent.

MANCHESTER. BAGULEY HOSPITAL, Wythenshawe. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. A vacancy exists for the post of SENIOR HOUSE OFFICER at the above Hospital, which has 402 Beds for tuberculous patients and is the Principal Thoracic Surgical Centre for the Manchester Region. Previous experience in tuberculosis desirable. The post is eminently suitable for a Physician wishing to gain experience in thoracic surgery as part of training in thoracic medicine.

Applications, with full details, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20, immediately.

MANCHESTER (near). ALTRINCHAM GENERAL HOSPITAL AND ANNEXE, ALTRINCHAM. (130 Beds.) SENIOR HOUSE OFFICER (surgical). This appointment affords excellent experience to suitably qualified candidates. Post recognised under F.R.C.S. regulations.

Applications to Group Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

MANCHESTER (near). ALTRINCHAM GENERAL HOSPITAL, ALTRINCHAM. (130 Beds.) Applications are invited for the pre-registration post of JUNIOR HOUSE OFFICER (surgical).

Applications to Group Secretary, The Hospital, Sinderland-road, Altrincham, Cheshire.

MAIDENHEAD HOSPITAL, St. Luke's-road, Maidenhead, BERKS. Applications invited for post of HOUSE SURGEON, vacant 29th January. Preference given to persons seeking pre-registration post.

Applications, stating age, nationality and qualifications with names of 3 referees, to Hospital Secretary.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RECEIVING ROOM OFFICER. Post vacant January, 1955. Salary £745 a year with a deduction of £150 a year for residential emoluments.

Applications to the Administrative Officer at the Hospital as soon as possible.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE SURGEON. 6-month appointment. Post vacant January, 1955. Salary at the rate of £425, £475 to £525 according to experience. A deduction at the rate of £125 a year is made in respect of board and lodging and other services provided.

Applications should be forwarded as soon as possible to the Administrative Officer at the Hospital.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON. Post recognisable for the F.R.C.S. (Eng.). Salary £745 a year, with deduction of £150 a year for residential emoluments.

Applications to the Administrative Officer at the Hospital as soon as possible.

MAIDSTONE. PRESTON HALL HOSPITAL, British LEGION VILLAGE, MAIDSTONE, KENT. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER at the above Hospital, which contains 330 Beds for the treatment of tuberculosis and includes major thoracic surgery. Candidates should have good experience in general medicine and in the treatment of pulmonary tuberculosis in adults. Appointment for 1 year in the first instance subject to renewal annually. Salary scale £775–£50–£1075 p.a.

Applications, stating age, qualifications and experience with relevant dates, together with names and addresses of 2 referees, to be sent to the Secretary to the Preston Hall Hospital Management Committee by 22nd January, 1955.

MACCLESFIELD. PARKSIDE MENTAL HOSPITAL. (1647 Beds.) Applications are invited from suitably qualified medical practitioners for the whole-time post of JUNIOR HOSPITAL MEDICAL OFFICER (psychiatric). Terms and conditions of service of hospital medical and dental staffs apply. Accommodation available for a single person. The appointment in the first place will be for a period of 4 years but reapplication may be made by the successful applicant at the end of this period. Preference will be given to candidates having previous general hospital experience. All modern methods of investigation and treatment are carried out, facilities for attending the course for the D.P.M. at Manchester University will be granted, and the Hospital is recognised by the Conjoint Board for the purposes of the D.P.M.

Applications, giving age, nationality, and full details, with the names of 3 referees, to be sent to the Medical Superintendent as soon as possible.

NOTTINGHAM GENERAL HOSPITAL. Resident House SURGEON (pre-registration first or second post) required for 8th February, 1955, for 6 months. Recognised for F.R.C.S.

Applications, stating age, qualifications and experience, to be sent to H. M. STANLEY, Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Resident HOUSE PHYSICIAN required, Male or Female (open to pre-registration candidates), at the above Hospital, duties to commence as soon as possible. Salary and conditions of service in accordance with published regulations. The appointment is for a term of 6 months.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR ORTHOPÆDIC AND FRACTURE HOUSE OFFICER (locum tenens considered). The post offers exceptional experience in traumatic surgery. Duties to commence as soon as possible. Salary and conditions of service in accordance with Ministry regulations. If resident £150 deducted for emoluments.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Resident House SURGEON (pre-registration first or second post) required for 20th December, for 6 months. Recognised for F.R.C.S.

Applications, stating age, qualifications and experience, to be sent to H. M. STANLEY, Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners (Male or Female—locum tenens considered) for the post of RESIDENT SENIOR ANÆSTHETIC HOUSE OFFICER. Duties to commence about 23rd December, 1954. Terms and conditions of service in accordance with published regulations of the Ministry of Health, £150 deducted for residential emoluments.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Group Secretary.

NOTTINGHAM CHILDREN'S HOSPITAL. (136 Beds. Recognised for the D.C.H.) Applications are invited for the post of RESIDENT HOUSE SURGEON (pre-registration) which falls vacant at the end of January. The post is tenable for 6 months.

Applications, with copies of 2 testimonials, should be sent to the Secretary, Nottingham Children's Hospital, Chestnut-grove, Nottingham.

NOTTINGHAM. CITY HOSPITAL. (804 Beds.) Applications are invited for the post of HOUSE SURGEON, vacant 3rd February, 1955. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NEWCASTLE GENERAL HOSPITAL. Newcastle upon TYNE HOSPITAL MANAGEMENT COMMITTEE. The resident post of SENIOR HOUSE OFFICER (general medicine) becomes vacant at the beginning of January, 1955, and is tenable for 12 months. The post offers opportunities for gaining clinical experience in inpatient and outpatient work, including a diabetic clinic, under the direction of the Head of the Department.

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials as soon as possible.

NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post which falls vacant on 1st February, 1955, of SENIOR HOUSE OFFICER (preferably resident) at the Newcastle Eye Hospital (31 Beds) and the Eye Unit at Walker Clinical Annexe (21 Beds). The Hospital is recognised for the Diploma of Ophthalmology. Previous experience in ophthalmology will be an advantage. Salary in accordance with the terms and conditions of service of hospital medical and dental staffs.

Applications, with the names of 3 referees, should be sent to the Hospital Secretary, Eye Hospital, St. Mary's Place, Newcastle upon Tyne, as soon as possible.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the whole-time non-resident post of SURGICAL REGISTRAR at the Royal Victoria Infirmary. The appointment will be for 1 year in the first instance and subject to the terms and conditions of service of hospital medical and dental staffs.

Applications, giving full particulars and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.
Royal Victoria Infirmary, Newcastle upon Tyne.

ORPINGTON HOSPITAL. Casualty Officer (Senior House Officer grade), preferably resident, required as from 1st January, 1955, for above General Hospital of 813 Beds. Post recognised for F.R.C.S.

Applications, with usual details, to Physician-Superintendent.

OXFORD. UNIVERSITY OF OXFORD. UNITED OXFORD HOSPITALS. Applications are invited for the post of SENIOR REGISTRAR in Obstetrics and Gynæcology to the United Oxford Hospitals. Applicants should hold the M.R.C.O.G. The post will be for 1 year in the first instance and eligible, subject to satisfactory service, for extension annually up to 4 years.

Applications on forms obtainable from Secretary, Registrars Committee, 43, Banbury-road, Oxford, should reach him by 31st December.

OXFORD. UNITED OXFORD HOSPITALS. Applications invited for post of Trainee RESIDENT SENIOR HOUSE OFFICER to Oxford Eye Hospital (52 Beds) with effect from mid-February. The successful candidate will, if found suitable, be appointed Resident Senior House Officer for 6 months from 1st October, 1955, at the Royal Berkshire Hospital (Ophthalmic Department) and a further 6 months as Senior Resident Officer at Oxford Eye Hospital at a salary of £850 p.a. Applicants must have had previous experience in ophthalmology. The post is recognised for the F.R.C.S. examination in ophthalmics.

Applications, stating age, qualifications and experience, together with the names of 2 referees, to Administrator, Radcliffe Infirmary, Oxford, by 1st January, 1955.

PETERBOROUGH. THE MEMORIAL HOSPITAL AND OBSTETRIC ANNEXES. PETERBOROUGH AND STAMFORD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (obstetrics and gynæcology). Applications are invited for this position. There are 54 obstetric beds and a busy Gynæcological Department. The Unit consists of a Consultant, Registrar and 2 House Surgeons. House Surgeon posts are recognised for D.Obst.R.C.O.G. Vacant 28th January, 1955.

Apply Secretary, Memorial Hospital, Peterborough.

PONTYPRIDD (near). EAST GLAMORGAN HOSPITAL, CHURCH VILLAGE. (316 Beds and large Outpatient Department. Committee's Base Hospital serving population of 177,000. Recognised for M.R.C.O.G., D.Obst.R.C.O.G., D.C.H., F.F.A.R.C.S., F.R.C.S.) PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE.

HOUSE OFFICER (surgical).
HOUSE OFFICERS (medical).
HOUSE OFFICER (pædiatrics).
HOUSE OFFICERS (obstetrics).

To commence 1st February, 1955. Persons appointed will perform duties at other hospitals in the Group as required.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Courthouse-street, Pontypridd.

PLYMOUTH. SCOTT ISOLATION HOSPITAL. House PHYSICIAN. Post vacant 1st February, 1955. Recognised pre-registration post which offers excellent experience.

Applications should be sent to the Group Secretary, Plymouth Special Hospital Management Committee, 8, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL, FREEDOM FIELDS. HOUSE SURGEON, vacant 1st January, 1955, pre-registration post, recognised for the F.R.C.S.

Applications, stating age, nationality, qualifications, and experience, with the names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary, Plymouth,
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL GENERAL HOSPITAL GROUP. SOUTH DEVON AND EAST CORNWALL HOSPITAL, PLYMOUTH. SENIOR HOUSE OFFICER in Surgery, vacant 4th February, 1955, at the Devonport Branch, a Surgical Unit (72 Beds). Recognised for the F.R.C.S.

Applications, stating age, nationality, qualifications, and experience, with names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary.
7, Nelson-gardens, Stoke, Plymouth.

PENZANCE. WEST CORNWALL HOSPITAL. West CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON to commence duty 1st February, 1955. Recognised as pre-registration appointment.

Applications to the Hospital Secretary.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

1. **Queen Alexandra Hospital, Portsmouth** (50 gynæcological beds)

HOUSE SURGEON, vacant 2nd February (126 surgical beds).

2. **Queen Alexandra Hospital and Royal Portsmouth Hospital**

ANÆSTHETIST (Senior House Officer grade). Recognised for the F.F.A.R.C.S. Vacant now.

3. **Royal Portsmouth Hospital**

HOUSE OFFICER for Paediatric and Medical beds (total 30). Vacant 16th January, 1955.

4. **St. Mary's Hospital**

HOUSE PHYSICIAN (pre-registration post), vacant 4th February (74 medical beds).

HOUSE SURGEON posts (pre-registration), vacant 26th January, 31st January, 9th February (107 surgical beds).

Applications, stating age, experience, and qualifications, together with names of 2 referees, should be forwarded as soon as possible to L. C. ROGERS,
35, Grove-road South, Southsea.

READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of a JUNIOR HOSPITAL MEDICAL OFFICER in the Area Department of Diseases of the Chest, for duty in the Reading Chest Clinic. Starting salary within the scale will be fixed by agreement with Ministry of Health, according to qualifications and experience.

Applications, stating age and qualifications, together with names of 3 referees, should be sent to the Group Secretary at 3, Craven-road, Reading, not later than 31st December.

ROCHDALE. BIRCH HILL HOSPITAL. Rochdale and DISTRICT HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN, post vacant January at above Hospital. Pre-registration candidates eligible.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER (resident) required from 1st January, 1955, for duties in the Casualty and Admissions Department. This is a large general hospital with specialised departments dealing with all types of acute medical and surgical cases. The post affords good opportunity for gaining tuition and experience.

Applications should be addressed to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, as soon as possible.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) RESIDENT SENIOR HOUSE OFFICER in Anæsthetics required from mid-February, 1955. Post recognised for F.F.A.R.C.S. Excellent opportunities exist at this Hospital for gaining tuition and experience in the administration of anæsthetics. The equipment is the most modern available.

Apply, giving full particulars, to Group Secretary, Oldchurch Hospital, as soon as possible.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER required in Neurosurgical Department. Post vacant from 3rd January, 1955. Suitable for candidates seeking higher medical or surgical qualifications. Recognised for the F.R.C.S. (Eng.).

Apply to Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, as soon as possible.

ROMFORD, ESSEX. VICTORIA HOSPITAL. (99 Beds.) RESIDENT HOUSE PHYSICIAN (Male) required from 6th January, 1955. (Post not approved for pre-registration purposes.)

Applications should be forwarded to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, as early as possible.

ROTHERHAM. DONCASTER GATE HOSPITAL. (161 Beds. Recognised for the D.A.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (anæsthetics) required. Post becomes vacant 2nd March, 1955. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 27th December, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

RYDE, I.W. ROYAL I.W. COUNTY HOSPITAL. (116 Beds.) RESIDENT HOUSE SURGEON (pre-registration post and recognised for F.R.C.S.), vacant late January.

Applications, with names of 2 referees, to Hospital Secretary not later than 27th December.

RHYMNEY AND SIRHOWY VALLEYS HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required from 1st February, 1955, at each of the following hospitals. Pre-registration if suitable candidate available.

Caerphilly (6 miles from Cardiff), 144 beds for general surgery, orthopædics, E.N.T., ophthalmology and gynæcology; 26 beds for general medicine. Busy Outpatients, Radiology and Pathology Departments.

Tredegar (20 miles from Newport, Mon, and 24 from Teaching Hospital at Cardiff; 6 miles from the Vale of Usk). Surgical Unit of 50 Beds with also 6 orthopædic beds under daily supervision of Consultant Surgeons and visiting supervision of Orthopædic Surgeon. Busy Outpatients Casualty and Radiology Departments. Married quarters available.

Salary £425–£525 according to experience, less appropriate deduction for married quarters (if required).

Apply, with full particulars, to Group Secretary, Hospital Management Committee, St. Martins-road, Caerphilly, by 1st January.

SCUNTHORPE. WAR MEMORIAL HOSPITAL. (267 Beds.) SCUNTHORPE HOSPITAL MANAGEMENT COMMITTEE. Vacancy for HOUSE SURGEON, 4th January, Senior House Officer grade. Post is recognised for pre-registration purposes and applications from suitable candidates will be welcomed.

Applications, naming 2 referees, to Group Secretary.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. Orthopædics. DUNDEE ROYAL INFIRMARY. Applications are invited for the post of SENIOR REGISTRAR in Orthopædics at Dundee Royal Infirmary, a general teaching hospital of 510 Beds associated with the University of St. Andrews. Higher surgical qualification and previous experience in orthopædics essential.

Further particulars and forms of application from the Secretary to the Board, "Braeknowe," 430, Blackness-road, Dundee, with whom applications must be lodged not later than 28th December, 1954.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Psychiatry at Lennox Castle Institution for the care of Mental Defectives, near Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 10th January, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR HOUSE OFFICER in Surgery at Western District Hospital, Glasgow. The appointment will be for 1 year in the first instance.

Applications, stating age, qualifications, experience and present appointment and naming 3 referees, to be lodged with the Secretary, Board of Management for Glasgow Northern Hospitals, 13, Woodside-place, Glasgow, C.3, not later than 29th December, 1954.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of MEDICAL REGISTRAR (Senior Registrar grade) in the service of the Board. The post, which is based on Inverness, is whole-time and non-resident.

Further particulars and schedules of application can be obtained from the undersigned, with whom applications should be lodged by 15th January, 1955.

A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. HOUSE OFFICER (casualty) required, 1 of 2, for busy Casualty Department. Experience provided in orthopædic and plastic cases.

Applications, stating age and qualifications, with names of 2 referees, to Hospital Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. SENIOR HOUSE OFFICER required for Department of Obstetrics and Gynæcology. Post vacant 14th January. Preference given to applicants with general and obstetric experience.

Applications, stating age and qualifications, with testimonials, to Hospital Secretary before 31st December, 1954.

SOUTHALL, MIDDLESEX. ST. BERNARD'S HOS-PITAL FOR NERVOUS AND MENTAL DISORDERS. Applications are invited for the post of SENIOR HOUSE OFFICER (non-resident). Facilities are afforded to junior staff to become versed in all branches of psychiatry. National Health Service salary and conditions.

Applications, giving full details and copies of 3 recent testimonials, should be sent to the Physician-Superintendent, within 14 days of appearance of this advertisement.

SHREWSBURY. EYE, EAR AND THROAT HOSPITAL. (70 Beds.) SENIOR HOUSE OFFICER (ophthalmic). Eye Unit 35 Beds. Post recognised for the D.O. Vacant 1st January, 1955.

Applications, with copy testimonials, to Group Secretary, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON for general surgical duties (pre-registration post). Vacant 10th January, 1955.

Applications, with copy testimonials, to Group Secretary, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY. (241 Beds.) SENIOR HOUSE OFFICER (casualty), resident or non-resident. Duties from 9 A.M. to 6 P.M. daily, except Saturday which will be 9 A.M.–1 P.M. Applicant required to do 1 week-end duty in 3. Post recognised for F.R.C.S.

Applications, with copy testimonials, to Group Secretary, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY/COPTHORNE HOSPITAL. (500 Beds.) HOUSE PHYSICIAN, for Pre-registration Service, vacant 1st January, 1955.

Applications, with copy testimonials, to Group Secretary, Royal Salop Infirmary, Shrewsbury.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications are invited for the following posts :—

(*a*) SENIOR REGISTRAR to the Department of Radiology at the Royal Infirmary and Royal Hospital Units. Candidates should hold a Diploma in Diagnostic Radiology. The appointment is for 1 year in the first instance and will be reviewed annually. It has been agreed in principle between the Board of Governors of The United Sheffield Hospitals and the Sheffield Regional Hospital Board that the appointment, if extended to the full period of 4 years, will be divided, subject to satisfactory work and progress, between The United Sheffield Hospitals and a hospital in the Region.

Applications, stating age, qualifications and experience, with the names of 3 referees, should be sent to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1, not later than 3rd January, 1955.

(*b*) Part-time CASUALTY OFFICER (Senior House Officer grade) to the Royal Hospital. Duties will be for 5 half-days each week in the afternoons—a total of 17½ hours per week.

(*c*) NON-RESIDENT SENIOR HOUSE OFFICER to the Thoracic Unit at the Royal Infirmary.

Applications for posts (*b*) and (*c*) should state age, qualifications and experience, and be sent immediately to :—

For post (*b*) : The Superintendent, Royal Hospital, West-street, Sheffield, 1.

For post (*c*) : The Superintendent, Royal Infirmary, Sheffield, 6. Copy testimonials may be sent for post (*c*).

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT SENIOR ORTHOPÆDIC REGISTRAR for Harlow Wood Orthopædic Hospital, near Mansfield (338 Beds), and associated clinics. Possession of a higher qualification desirable. Appointment for 1 year in first instance, reviewable annually.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 27th December, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT SENIOR REGISTRAR (obstetrics and gynæcology) for the Nottingham Hospital for Women. Candidates should preferably be Members of the Royal College of Obstetrics and Gynæcology. Work of the Hospital is mainly gynæcological but 27 Beds available for abnormal obstetric cases. Appointment for 1 year in the first instance, reviewable annually. It has been agreed between the Sheffield Regional Hospital Board and the Board of Governors of the United Sheffield Hospitals that, subject to satisfactory work and progress the tenure of the appointment will be divided between the Nottingham Hospital for Women and the Jessop Hospital for Women, Sheffield.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 3rd January, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD. NETHER EDGE HOSPITAL. Applications are invited for the resident post of SENIOR HOUSE OFFICER. Main duties will be in connection with the Maternity Unit but will also be required to assist in the wards for long-stay medical cases. Small flat available on rental.

Applications, giving full details of age, qualifications, present and previous appointments with dates, and the names of 2 persons to whom reference may be made, should be forwarded to W. STANSFIELD, at Nether Edge Hospital, Sheffield, 11.

SOUTHPORT GENERAL INFIRMARY. (195 Beds. Recognised for pre-registration.)

HOUSE SURGEON (general surgery and ophthalmology). Recognised for F.R.C.S.

HOUSE PHYSICIAN.

Posts are resident and become vacant late January or early February, 1955.

Apply to— T. CROOK, Group Secretary,
Southport and District Hospital Management Committee.
Promenade Hospital, Southport.

STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY. (175 Beds—32 Recovery Unit.) HOUSE SURGEON (Male or Female). Post or pre-registration candidates considered. Post vacant 6th January.

Applications, giving full particulars and copies of 3 recent testimonials, to the Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

STOCKPORT INFIRMARY. (163 Beds.) Applications are invited for the following posts, which are approved for pre-registration purposes :—

HOUSE OFFICER (general surgery and ophthalmology). Recognised for the F.R.C.S. and D.O.M.S. Vacant 10th January, 1955.

HOUSE OFFICER (general surgery and E.N.T.). Recognised for the F.R.C.S. and D.L.O. Vacant 17th January, 1955.

HOUSE OFFICER (general surgery and gynæcology). *Recognised for the F.R.C.S. Vacant 19th January, 1955.*

Applications, stating age, qualifications and experience, together with copies of 2 testimonials, to be addressed to the Secretary, 59B, Shaw-heath, Stockport, Cheshire.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (384 Beds.) HOUSE SURGEON (House Officer grade) required for 1 of the 2 general surgical teams. Recognised for the F.R.C.S. Post vacant about 17th January, 1955, and tenable for 6 months. Preference given to candidates seeking pre-registration posts under the Medical Act, 1950.

Applications to the Group Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as REGISTRAR in Surgical and Medical Neurology at Hurstwood Park, Haywards Heath, where there is a close neuropsychiatric association. The appointment which is available on 1st March, 1955, will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 3 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 1st January, 1955.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) CASUALTY OFFICER/SENIOR HOUSE OFFICER (orthopædic). Required for the above Hospital (Orthopædic Unit 74 Beds) in January. This Hospital is the centre to which all trauma from a large industrial town and port is directed, thus providing excellent experience in the treatment of traumatic conditions.

Applications, with copies of testimonials, to be submitted as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

ST. HELENS AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. WHISTON HOSPITAL, PRESCOT. (882 Beds.) Applications are invited for the appointment of RESIDENT PÆDIATRIC HOUSE PHYSICIAN. The Hospital is recognised for the D.C.H. examination. The department comprises 22 Cots and 28 Beds and in addition there are 75 neonatal cots and a busy Outpatients Department.

Applications, stating age, qualifications and experience, and giving 2 names for reference, should be forwarded immediately to N. RICHARDS, Secretary,

Group Office, Whiston Hospital, Prescot.

SWANSEA. MORRISTON HOSPITAL. (501 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the resident appointment of SENIOR HOUSE OFFICER in the Casualty Department, with duties in the Orthopædic Department.

Applications, stating age, qualifications and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea.

SWANLEY, KENT. KETTLEWELL HOSPITAL. Sidcup AND SWANLEY HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident appointment of SENIOR HOUSE OFFICER from mid-January, 1955. Salary £745 p.a. The Hospital is 1 of the regional centres for the short-term treatment of pulmonary tuberculosis and its outpatient clinics deal with all varieties of chest disease. The post offers good facilities for training in this specialty. Previous experience in the treatment of tuberculosis desirable. Applicants are invited to visit the Hospital by appointment with the Physician-Superintendent.

Applications to the Secretary at Queen Mary's Hospital, Sidcup, Kent.

WARRINGTON GENERAL HOSPITAL. (368 Beds.) Applications are invited from persons experienced in anæsthetics for the post of RESIDENT ANÆSTHETIST (Male or Female) graded as Senior House Officer. The Hospital is recognised for the D.A. examination. Salary is £745 p.a., less a deduction of £130 p.a. for residential emoluments.

Applications, stating qualifications and experience should be sent to— H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WARRINGTON INFIRMARY. Applications are invited from qualified practitioners for the vacancy of RESIDENT ANÆSTHETIST (Senior House Officer grade), Male or Female, at the Warrington Infirmary. The Infirmary is recognised for the D.A. examination. Scale of salary £745 p.a., less £130 p.a. for residential emoluments.

Applications to—
H. L. BOOT, Group Secretary
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WARWICK GENERAL HOSPITAL. (350 Beds.) House SURGEON, pre-registration or registered candidates may apply. Resident with possibility of accommodation being available for married officer. Vacant end of January, 1955. Good experience in general surgery.

Applications, with 2 testimonials, to be forwarded to Medical Superintendent.

WATFORD AND DISTRICT PEACE MEMORIAL HOSPITAL, WATFORD, HERTS. (198 Beds.) Applications are invited from registered medical practitioners for the post of HOUSE PHYSICIAN at this Hospital. Salary according to the National Health Service scale.

Applications, giving names of 2 referees, to be addressed to—
CYRIL HOPKINSON, Administrator.

WELSH REGIONAL HOSPITAL BOARD. Registrar (anæsthetics), Mid Glamorgan Hospital Management Committee, based at Neath General Hospital, Glam. (412 Beds). Hospital recognised for D.A. Resident or non-resident. Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace and Health, Cathays Park, Cardiff, within 14 days.

WOLVERHAMPTON GROUP.

The Royal Hospital, Wolverhampton (An Associated Hospital of the University of Birmingham Medical School)

*3 HOUSE OFFICERS (general surgery), approved for Pre-*registration Service, vacant early January.

HOUSE OFFICER (Ear, Throat, and Nose Department), vacant now.

Applications, with copies of 3 recent testimonials, to be sent to Group Secretary, The Royal Hospital, Wolverhampton.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) HOUSE SURGEON (post recognised by Royal College of Surgeons) required for general surgery with some E.N.T. duties. Approved pre-registration post. Vacant 9th February.

Applications, with copies of 2 testimonials, to the Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. House SURGEON in General Surgery required (Male or Female), for post vacant 20th January. Recognised for F.R.C.S. Preference given to persons seeking pre-registration post. Applicants required to be members of Medical Protection Society.

Applications, stating age, nationality, qualifications with dates, with copies of recent testimonials, to Hospital Secretary, by 31st December.

WORKSOP. VICTORIA HOSPITAL. (127 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required with some duties also at Kilton Hospital, Worksop (190 Beds). There are 125 acute surgical beds at these hospitals and the post offers broad training in general surgery, E.N.T., orthopædic and traumatic surgery. Appointment for 1 year in the first instance.

Apply Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 27th December, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

WORTHING HOSPITAL, Lyndhurst-road, Worthing, SUSSEX. (210 Beds—General.) WORTHING GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required.

Applications from either registered medical practitioners, or pre-registration candidates, stating age, qualifications, experience, nationality and enclosing copies of 2 recent testimonials, to be forwarded to the Hospital Secretary as soon as possible.

A. V. OAKTON, Group Secretary.

WORTHING GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of ANÆSTHETIC REGISTRAR in the above Group (Southlands Hospital, 411 Beds; Worthing Hospital, 273 Beds). Post is recognised for the D.A. and F.F.A.R.C.S.

Forms of application are obtainable from the undersigned and should be returned within 14 days from the appearance of this advertisement.

A. V. OAKTON, Group Secretary,
Worthing Group Hospital Management Committee.
129, Brighton-road, Worthing, Sussex.

WOODFORD GREEN, ESSEX. HARTS HOSPITAL. (100 Beds.) HOUSE OFFICER required, post vacant 26th January, 1955. The Hospital is a modern sanatorium with a Thoracic Surgical Unit and area chest clinic. The post offers exceptional opportunity for gaining experience in tuberculosis and diseases of the chest. The Hospital is close to the underground railway and within easy reach of Central London.

Applications, with copy of a recent testimonial, should be sent to the Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

WREXHAM (near), TREVALYN MANOR MATERNITY HOSPITAL, ROSSETT. (47 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital, to commence 1st February, 1955.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, should be addressed to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

YORKSHIRE. EAST RIDING HOSPITAL MANAGEMENT COMMITTEE.

East Riding General Hospital, Driffield, Yorkshire (247 Beds)

SENIOR HOUSE PHYSICIAN, vacant 1st January, 1955. Salary £745.

Detailed applications, with references, to Group Secretary, Westwood Hospital, Beverley, Yorkshire.

BALTIMORE, MARYLAND, U.S.A. FRANKLIN SQUARE HOSPITAL. ROTATING INTERNSHIPS available. Fully approved. Council on Medical Education, American Medical Association.

Applications to Franklin Square Hospital, Baltimore 23, Md., U.S.A.

Public Appointments

BAHRAIN, PERSIAN GULF. GOVERNMENT OF BAHRAIN MEDICAL DEPARTMENT invites applications from British Male doctors for the post of ANÆSTHETIST. Age 28–33. D.A. qualification essential. Preference given to those who can combine this with other medical duties. Minimum salary £1697, rising £45 annually, no allowances. Private practice among Europeans only. No income-tax. Free quarters with hard furniture and car. Agreement for 2 years, renewable, with 5 months home leave on full pay and free air passage every 2 years for doctor and wife, but not family.

Applications, showing candidates career, age, family responsibilities, 3 testimonials and photograph, should be sent to the C.M.O., Bahrain Government Hospital, Bahrain, Persian Gulf.

BIRMINGHAM. CITY OF BIRMINGHAM EDUCATION COMMITTEE. Applications are invited from registered medical practitioners (Men or Women) for appointment as SCHOOL MEDICAL OFFICER in the School Health Service. The possession of a D.P.H. or D.C.H. will be an advantage. Salary in accordance with Whitley Council scale of £950–£50–£1300 p.a. Appointment is subject to the appropriate superannuation act and to the passing of a medical examination.

Forms of application obtainable from the undersigned (stamped addressed envelope) must be returned not later than 3rd January, 1955. Canvassing disqualifies.

E. L. RUSSELL, Chief Education Officer.
Queen's College Chambers, 38A, Paradise-street,
Birmingham, 1.

BIRMINGHAM. CITY OF BIRMINGHAM. Public HEALTH DEPARTMENT. Whole-time ASSISTANT MEDICAL OFFICER (Male or Female) for Maternity and Child Welfare. Applicants should have had experience in work with mothers and children, including a 6 months resident post in a maternity hospital and in a children's hospital. The D.P.H. will be considered an additional qualification. The duties will be mainly in connection with maternity and child welfare as well as the medical aspects of the care of deprived children. Salary £950–£50–£1300 p.a. according to qualifications and experience. Pension scheme (including Widows and Orphans); medical examination.

Form obtainable from Medical Officer of Health, Council House, Birmingham, 3. Applications, with 3 recent testimonials, to be returned by 15th January, 1955.

BELFAST. CITY OF BELFAST. Health Committee. Appointment of ASSISTANT MEDICAL OFFICER (Male). Candidates must:—

(i) be duly qualified Male registered medical practitioners;
(ii) hold a Degree or Diploma in Public Health, State Medicine, or Sanitary Science;
(iii) be under 45 years of age on the date on which they would take up duty, if appointed, and
(iv) comply in all other respects with the Health Authorities (Qualifications and Duties of Medical Officers) Regulations (N.I.) 1948 (S.R. & O. 1948 No. 26).

Salary scale £950–£50–£1300 p.a. Credit may be given for previous experience in Public Health Service. Superannuation contributions are payable at the rate of approximately 6% of remuneration. Reciprocal pension arrangements exist with Local Authorities in Great Britain and Northern Ireland. Canvassing will disqualify.

Application forms and further particulars may be obtained from the Health Department (Room 53), City Hall, Belfast. Completed applications must reach the undersigned not later than 4 P.M. on Friday, 7th January, 1955.

JOHN DUNLOP, Town Clerk.

City Hall, Belfast, 8th December, 1954.

CEYLON GOVERNMENT. Applications are invited for the post of DIAGNOSTIC RADIOLOGIST in the Department of Health Services of the Government of Ceylon for an 18-month appointment. Place of employment will be the General Hospital, Colombo, and duties will include the training of officers of the Medical Department who are specialists in radiology; fuller particulars of the department will be sent on application. This vacancy is to be filled by the United Kingdom as a contribution to the Ceylon Government under the Technical Co-operation Scheme of the Colombo Plan. Upper age limit 50 years; salary scale £1700–£2750 according to experience, plus tax free overseas allowance £1400 (married) or £865 (single) p.a. Free furnished accommodation or an allowance in lieu. Free medical attention. Special clothing allowance. Travel allowance for journeys on duty. First-class return passage for selected candidate and family, if any.

Write, giving full particulars of experience and qualifications and the names of 3 referees, to the Secretary, Ministry of Health, Division 5A, Savile-row, London, W.1. Closing date for application 7th January, 1955.

FACTORY DOCTORS. Factories Acts, 1937 and 1948. The following appointments as Appointed Factory Doctor are vacant. Apply to Chief Inspector of Factories, 8, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of applications*
KINGSWOOD ..	GLOUCESTER ..	1ST JANUARY, 1955
ALLOA	CLACKMANNAN ..	8TH JANUARY, 1955

GLASGOW. CORPORATION OF GLASGOW. Public HEALTH LABORATORY. Applications are invited for the whole-time appointment of MEDICAL ASSISTANT BACTERIOLOGIST (Female). Some experience of routine bacteriology and serology is necessary. Salary scale £950–£50–£1300 p.a. The post is superannuable, subject to age, qualifications, and medical examination.

Applications, stating age, qualifications, and experience, with names of not more than 3 referees (envelope marked "Appointment—Medical Assistant Bacteriologist") should reach me by Tuesday, 28th December, 1954.

City Chambers, Glasgow. WILLIAM KERR, Town Clerk.

HER MAJESTY'S OVERSEA CIVIL SERVICE. Medical BRANCH, NORTH BORNEO. MEDICAL OFFICER required in North Borneo for duties including day-to-day general clinical work in tropical and other diseases, maternity and child welfare promotion of public and rural health and sanitation, with a limited amount of routine administrative functions appertaining to the locality and/or hospital in which he is serving. In addition he may be called upon to perform emergency surgery and to attend to midwifery cases. Appointment will be on 3 years probation for permanent and pensionable employment or on short-term contract with gratuity on completion of satisfactory service. Salary scale, including pensionable expatriation pay, ranges from $780 to $1255 a month (£1092–£1757 a year. 1 North Borneo dollar equals 2s. 4d.). Starting salary depends upon age, qualifications and experience. In addition, a cost-of-living allowance may also be payable, up to approximately £350 a year, and is determined by the officer's salary and family circumstances. *It is subject to periodical revision.* Private practice is not allowed but consultation is permitted in certain circumstances. Quarters are provided at low rental. Income-tax at local rates. Free passages in both directions are provided for Officer, wife, and up to 3 children under 18 years of age. Normal tour of service is from 30 to 36 months. Local leave is permissible and generous home leave is granted after each tour. *Pension is earned at the rate of 1/600th of the final pensionable* emoluments for each completed month of service. Candidates must possess medical qualifications registrable in the United *Kingdom.*

Application forms can be obtained from the Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.117/21/04).

DUBLIN. LOCAL APPOINTMENTS COMMISSION. Medical position vacant. RADIOLOGIST, Sligo County Council. Salary £1975.

Application forms and particulars from the Secretary, 45, Upper O'Connell-street, Dublin. Latest time for receiving completed application forms 5 P.M. on 4th January, 1955.

This advertisement is in substitution for a recent one.

KINGSTON UPON HULL. CITY AND COUNTY OF KINGSTON UPON HULL. Applications are invited from duly qualified medical practitioners for the appointment of DEPUTY MEDICAL OFFICER OF HEALTH for the City, to be held in conjunction with the appointments of DEPUTY PRINCIPAL SCHOOL MEDICAL OFFICER, DEPUTY MEDICAL OFFICER OF HEALTH (at Hull) to the Hull and Goole Port Health Authority and MEDICAL INSPECTOR OF ALIENS under that Authority. Applicants should be holders of a Diploma in Public Health and the possession of additional degrees, diplomas or academic distinctions will be considered an advantage. Salary scale £1466 13s. 4d. p.a., rising by 2 annual increments of £100 and 1 of £50 to a maximum of £1716 13s. 4d. p.a., plus " essential user " car allowance.

Particulars of the appointment and forms of application may be obtained from the Medical Officer of Health, Guildhall, Kingston upon Hull, to whom completed application forms must be returned not later than 3rd January, 1955.

KINGSTON UPON HULL. CITY AND COUNTY OF KINGSTON UPON HULL. (Maternity and Child Welfare.) Applications are invited from duly qualified medical practitioners for the appointment of SENIOR MEDICAL OFFICER in connection with the Corporation's Maternity and Child Welfare Services. Applicants should be holders of a Diploma in Public Health and the possession of additional degrees, diplomas or academic distinctions will be considered an advantage. Salary 1250 p.a., rising by annual increments of £50 to a maximum of £1650 p.a., plus " essential user " car allowance.

Particulars of the appointment and forms of application may be obtained from the Medical Officer of Health, Guildhall, Kingston upon Hull, to whom the completed application forms must be returned not later than 3rd January, 1955.

LONDON COUNTY COUNCIL. Medical Officer for B.C.G. vaccination. Applications invited from registered medical practitioners for appointment as Whole-time MEDICAL OFFICER in the Public Health Department. Salary £950–£50–£1300. Commencing salary dependent on previous experience. Duties will comprise mainly anti-tuberculosis work. The appointed officer may be required for general medical work. Experience in paediatrics and in tuberculin testing and B.C.G. vaccination desirable.

Application forms—The Medical Officer of Health (PH/DI), The County Hall, London, S.E.1, returnable by 14th January, 1955. (1591.)

NORFOLK COUNTY COUNCIL. Applications are invited from registered medical practitioners holding the Diploma in Public Health for the appointment of DEPUTY COUNTY MEDICAL OFFICER. Candidates must have had previous administrative experience of the Public Health and School Health Services. Salary scale £1533 6s. 8d.–£100(2)–£50(1)–£1783 6s. 8d. with travelling and subsistence expenses in accordance with the County Council's scales.

Application forms, together with further particulars of the appointment, can be obtained from the County Medical Officer, 29, Thorpe-road, Norwich, to whom applications should be returned not later than 31st December, 1954.

NEW ZEALAND HEALTH DEPARTMENT. Industrial MEDICAL OFFICERS. Applications are invited from registered medical practitioners for industrial work in the New Zealand Health Department at Palmerston North or Auckland. Salary £1515 (N.Z.) p.a. rising to £1775 (N.Z.) Applicants should hold the Diploma in Industrial Health or the Diploma in Public Health or have had industrial medical experience. The appointments will involve substantial travelling.

Application forms and conditions of appointment may be obtained on request from the High Commissioner for New Zealand, 415, Strand, W.C.2, quoting reference No. 16/195/32 and mentioning this paper. Completed applications to be lodged not later than 15th January, 1955.

WEST BROMWICH. COUNTY BOROUGH OF WEST BROMWICH. MEDICAL OFFICER OF HEALTH, CHIEF WELFARE OFFICER AND PRINCIPAL SCHOOL MEDICAL OFFICER. The Council invite applications for the above post from gentlemen who hold the qualifications in accordance with the Local Government Act, 1933, and the regulations made thereunder. The salary will be £1650 p.a., rising by annual increments of £50 to £1900 p.a. The Council have adopted the conditions of service agreed by the Medical Council of the Whitley Councils for the Health Services.

Full particulars and form of application may be obtained from the undersigned, and applications must reach me not later than 3rd January, 1955. Envelopes should be endorsed " Medical Officer of Health."

Town Hall, West Bromwich. J. M. DAY, Town Clerk.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

MILBORNE PORT, SOMERSET. Applications are invited for a VACANCY (semi-urban) arising 1st April, 1955, due to retirement. List at present approximately 1000, all prescribing, with approximately an additional 30 resident in Dorset. Residence including surgery may be available for purchase by successor. Applications on Form E.C.16A, before 15th January, 1955, to—

R. W. FELTHAM, Clerk of the Somerset Executive Council.
11, Elmhyrst-road, Weston-super-Mare, Somerset.

Hospital Services : Non-Medical Appointments

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.1. Applications are invited from suitably experienced candidates for the post of MEDICAL ARTIST. Salary scale £525–£25–£650 p.a. National Health Service superannuation scheme.

Particulars and form of application obtainable from the Secretary.

Appointment : Too Late for Classification

SWANSEA HOSPITAL. (406 Beds.) Glantawe Hospital MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident appointment of SENIOR HOUSE OFFICER in the Orthopædic Department of the above Hospital.

Applications, stating age, qualifications, and experience, should be addressed to the Group Secretary, Glantawe Hospital Management Committee, St. Helen's-road, Swansea.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies

NATIONAL MASS-RADIOGRAPHY ASSOCIATION LTD. Appointment of ASSISTANT MEDICAL DIRECTOR. Salary : £1075–£50–£1275 p.a. The point of entry to the scale will be fixed by the Board in relation to the appointee's experience. Essential qualifications : Candidates must be registered medical practitioners. Desirable qualifications : Possession of the D.M.R., or the D.M.R.E. (or an equivalent qualification), or experience in the interpretation of chest X-ray films, or experience of mass-radiography. Duties : To interpret and report on mass miniature X-ray films. The appointment will be whole-time and temporary.

Further particulars and application forms obtainable from the Secretary, National Mass-Radiography Association Limited, 37/39, Tara-street, Dublin, to whom completed application forms should be forwarded to reach him not later than 31st December, 1954.

Medical Officer required for Middle East by large Oil Company ; preference for those with overseas experience and some knowledge of tropical work. Age about 35 and preferably single. Emoluments total over £1800 p.a. ; paid home leave after 2 years ; pension fund.—Write quoting No. 379 to Box No. 8190, c/o CHARLES BARKER & SONS LTD., 31, Budge-row, London, E.C.4.

A Partnership is available with an income of approxi-mately £4000 p.a. in a private Pathological Laboratory in South Africa with hospital appointments. Applicants must be registrable as Specialist Pathologists in the Union.—Apply to : Address, No. 988, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Assistant with View required Cheshire town in early January. Married applicant preferred.—Address, No. 991, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Wanted—Woman practitioner to take Tuesday afternoon surgery, 3.30–4.30 P.M. for next 6 months.—Apply, 77, Woodbridge-hill, Guildford (Telephone : Guildford 61370).

Surrey. Soundly established Nursing-home. Suitable 42 patients. Property held on full repairing lease at £500 p.a. Approximate average turnover £10,000 p.a. Price to include furniture, fittings and goodwill £3000.—Full particulars HAROLD WILLIAMS & PARTNERS, Chartered Surveyors, 80, High-street, Croydon (CRO : 1931).

Manchester. Premises at end of St. John-street com-prising 3 ground-floor offices, 2 first-floor offices, 2 second-floor offices. Total floor area 1260 square feet. Very suitable indeed for a group of specialists who are prepared to share this self-contained and compact accommodation. Rent £450 p.a. R.V. £138.—W. H. SUTTON & SONS, 60, Spring-gardens, Manchester, 2.

" Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimen of urine and £1 1s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE, LTD., 98, Victoria-street, S.W.1 (Phone : VICtoria 0141), who are specialists in this kind of work.

Austin. The new Show Models A.30, A.40, A.50 and A.90. Limited number of deliveries to proven essential users.—Application form, brochures, easy terms, from Austin House, 140/144, Golders Green-road, Golders Green, London, N.W.11.

Hypnotism. Will all Doctors interested in this subject for Medical purposes please write to the Secretary, British Society of Medical Hypnotists, 48, Wick Hall, Hove, 2, Sussex.

Hebridean Cruises—12 and 14-day Cruises by 80 ft. Motor Yacht through Scotland's Western Isles and Lochs. Fully inclusive fare (from Glasgow) from 34 and 39 guineas. Also 8-day Cruises (May only) from 18 guineas.—Write : BLUE WATER CRUISES LTD. (Dept. L), 68, Gordon-street, Glasgow.

Occupational Therapy. Part worked tapestries. The patient does the background. Very reasonable prices. Reductions for Institutions or Hospitals. Weekly approval.—Details from LUXURY NEEDLEPOINT, 245, Regent-street, W.1 (GERrard 3350).

Offers wanted for the following articles : Electro-Cardiograph by Sklar, Electric Blood Pump by Pelling. Autoclaves : One electric, one for gas, also several metal cabinets. Any of these articles may be inspected by appointment.—E. W. WINTON, 52, Dartmouth-road, N.W.2.

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